silent 700
electronic data terminals

Model 742 Programmable Data Terminal
Operating Instructions

Manual No. 974079-9701, Rev. B

Revised 1 April 1979

TEXAS INSTRUMENTS
INCORPORATED

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Model 742 Programmable Data Terminal Operating Instructions, 974079-9701, Rev. B
Original Issue: 1 October 1974

CHANGE NOTICES

Revision Letter	Date	ECN Number	ECN Level	Description
—	4-1-76	391867	C	To add the Memory Expansion Feature
—	4-1-76	409710	C	To add printing paper warranty note
—	10-1-76	409577	B	To add calculator — cluster keyboard options
A	2-1-77	414853	C	To update and add Installation section.
B	1-15-79	441656	D	To delete alcohol instructions

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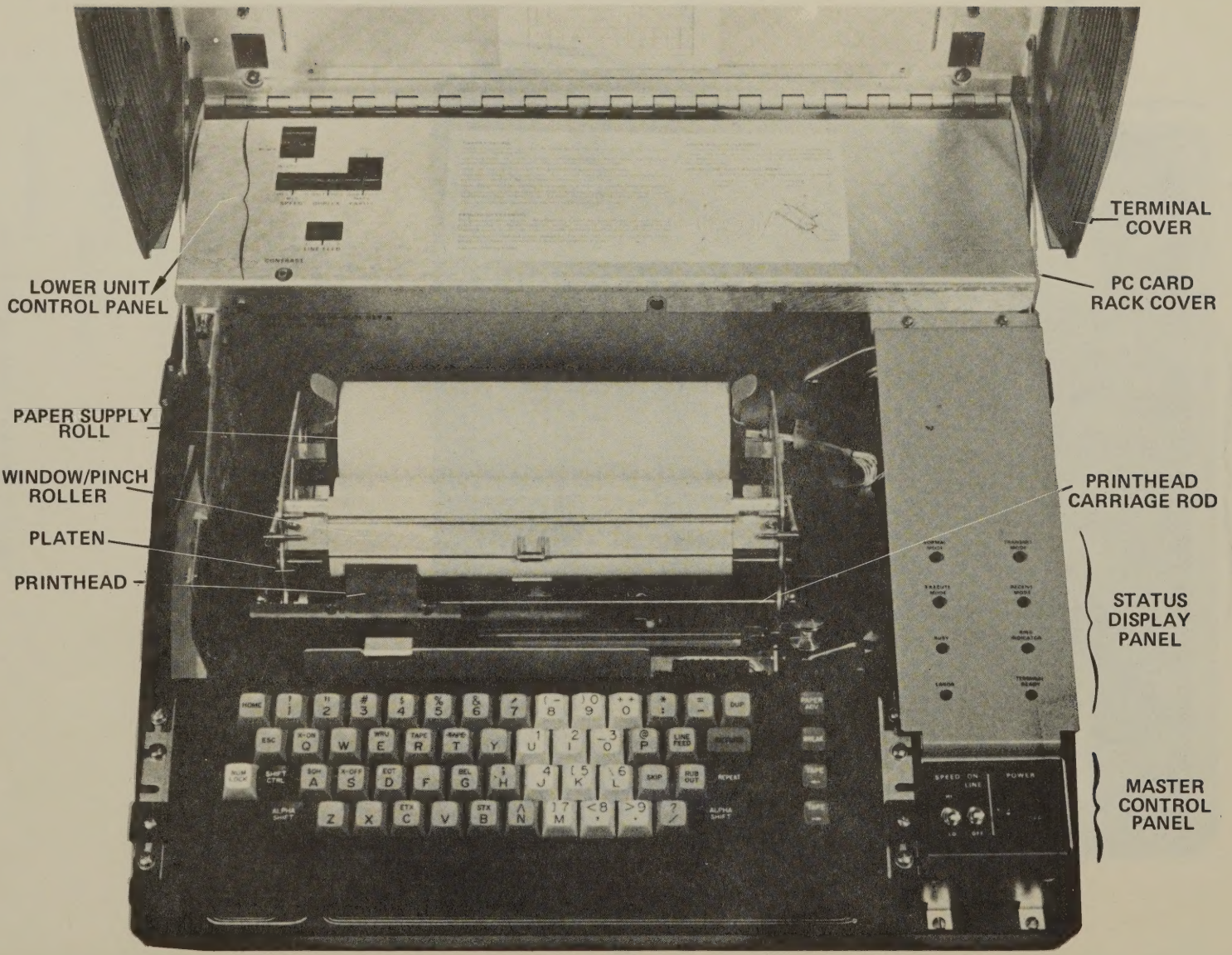
Texas Instruments Model 742 Programmable Data Terminal



Model 742 Operator Controls and Indicators

INTRODUCTION

You are about to learn to use the Texas Instruments Model 742 Programmable Data Terminal . . . the data terminal designed for efficient recording of data onto magnetic tape cassettes. Data recorded on the tape cassettes may be later transmitted to other Model 742 Data Terminals or to a central computer. Even if you have no previous data processing or data terminal experience, you will find the Model 742 easy to operate.

The quiet electronic printing of *Silent 700** Data Terminals is achieved by a miniature 5 x 7 dot matrix of 35 heating elements on a solid-state printhead which creates characters on heat-sensitive paper. The keyboard is equipped with special function keys and a built-in numeric cluster (similar to a 029 keypunch) to facilitate rapid and accurate data entry.

What makes a data terminal different from a standard typewriter is its ability to generate codes via the keyboard which can be transmitted to, and understood by, a remote data terminal or computer. The Model 742 utilizes the USASCII code system, commonly called ASCII (pronounced "as-key"). What makes the Model 742 Programmable Data Terminal different from standard data terminals is its ability to be *programmed* to signal you when you have entered data incorrectly. This ability is made possible by an internal processor and memory system which gives the terminal *intelligence.*

First, briefly study the Model 742 keyboard and note the similarities to and differences from the keyboard you may be accustomed to using. For example, you must depress both LINE FEED and RETURN keys on the Model 742 keyboard to accomplish the same action as a CARRIAGE RETURN on a standard typewriter. The ALPHA SHIFT on the Model 742 is comparable to the SHIFT key on a standard typewriter. The NUM LOCK key, unavailable on standard typewriter keyboards, permits you to use the white keys on the Model 742 for fast entry of numbers.

Second, look at the upper unit. The two tape cassette transports operate very much like commercial audio tape cassette units except that instead of recording and playing back sound, the Model 742 cassette units record and play back data. Data is recorded on tape by magnetizing very small "dots" in certain patterns (the ASCII code) which represent characters. These magnetized dots are called "bits."

Next, read the step-by-step operating instructions contained in Sections I and II. If you would like to practice the operating procedures as they are explained, use the SUPPLEMENT to the OPERATING INSTRUCTIONS (TI Manual No. 974070-9701) and the special TI-supplied demonstration tape (TI Part No. 984615-0001). You also will need a blank tape cassette and roll of TI printing paper. This manual and the SUPPLEMENT are coordinated so that when an operation is explained in this manual, you can practice the operation outlined in the SUPPLEMENT. When you encounter a star (★) in the instructions, look at the bottom of the page to find the exercise and page numbers for the corresponding operation in the SUPPLEMENT. Ask a coworker to read aloud the instructions in the SUPPLEMENT while you perform them, so you can concentrate on the Model 742.

After you become familiar with basic terminal operations in Sections I and II, read Section III for more advanced operations, and Section IV for additional information regarding the controls and keyboard. Finally, be sure to read Section V – every operator should know how to clean and care for the Model 742 Programmable Data Terminal.

NOTE

If you do not know the meaning of a technical word, refer to Appendix A for definitions.

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GENERAL OPERATING GUIDELINES

1. PRESS means: depress the designated key or control momentarily and then release it. PRESS AND HOLD means: depress and hold the key or control until some stated action is completed.

2. Press the PAPER ADV key to return the printhead to the left margin and advance the paper. Use this key when you do *not* wish to generate a code to be transmitted to the communication line or recorded on tape.

3. Press both LINE FEED and RETURN keys at the end of a typed line when you *do* wish to generate the respective codes to be transmitted to the communication line or recorded on tape.

4. For ease of reading, specific cassette tape (i.e., "CASSETTE 1" or "CASSETTE 2") transports are designated in the instructions in Sections I, II and III; either transport may be used if the corresponding controls are properly set. The only exception may be when operating under format program control. (Ask your supervisor.)

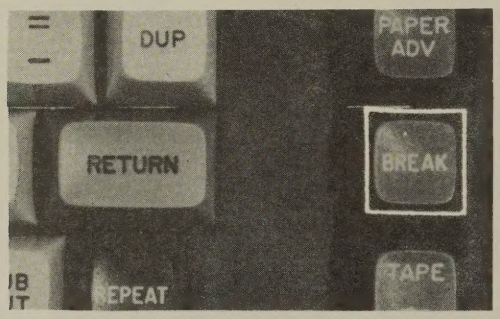
5. The instructions in Sections I, II and III assume the following:

   a. The terminal is plugged in and switched on (page 3).

   b. The terminal is switched to local unless otherwise specified (page 3).

   c. The lower unit internal control panel switches are correctly set to operate according to your system; ask your supervisor if you are not sure (page 61).

The BREAK key is the master panic key! If the terminal is in the EXECUTE MODE, pressing the BREAK key returns the terminal to the NORMAL MODE, in which *you*, rather than the *format program*, have control of terminal functions.



CAUTION

If you are entering data under format program control while simultaneously transmitting data to the line (as described on pages 44 through 47, pressing the BREAK key will not only return the terminal to the NORMAL MODE, but will also send a spacing condition to the line which in most cases will halt transmission. (Ask your supervisor.)

SECTION I
BECOMING FAMILIAR WITH THE TERMINAL

Operating the Model 742 Programmable Data Terminal is fun!

As briefly explained in the Introduction, the Model 742 is a "smart" data terminal; it has "intelligence." When the Model 742 terminal is smart, a format program resident in memory controls all the basic terminal functions (e.g., rewinding a tape, activating the printer) and helps you make sure data you enter from the keyboard is correct. The 742 terminal also reduces the entries you must make by automatically inserting all common or fixed data. In this case the Model 742 is said to be in the EXECUTE MODE.

The Model 742 also can operate as a standard data terminal; i.e., all basic terminal functions are controlled by you and no checks are made on the data you enter from the keyboard. In this case, the Model 742 is said to be in the NORMAL MODE. All operations described in this section are performed in the NORMAL MODE.

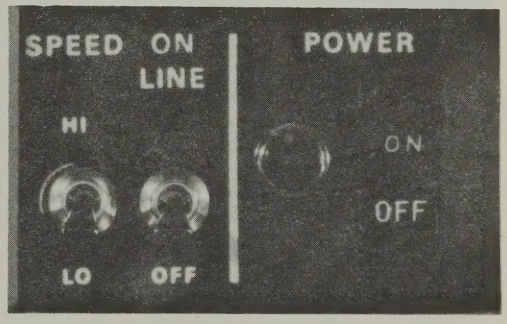
Before proceeding, read the definitions for record buffer (*buffer, record*) and playback buffer (*buffer, playback*) in Appendix A.

SWITCHING THE TERMINAL ON AND OFF

1. Be sure the power cord is plugged into a 115-volt wall outlet.

2. To switch on the terminal, press the top part (ON) of the POWER switch, located to the right of the keyboard; the adjacent indicator lamp will illuminate.

3. To switch the machine off, press the bottom part (OFF) of the POWER switch; the adjacent indicator lamp will go out.



SWITCHING THE TERMINAL TO ON-LINE AND LOCAL

1. To connect the terminal to the communication line (*on-line*), flip the ON LINE switch (adjacent to the POWER switch) to the up position.

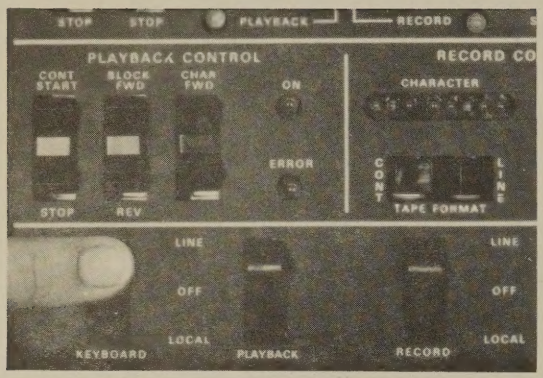
2. To disconnect the terminal from the communication line (*local*), flip the ON LINE switch to the down position (OFF).

NOTE

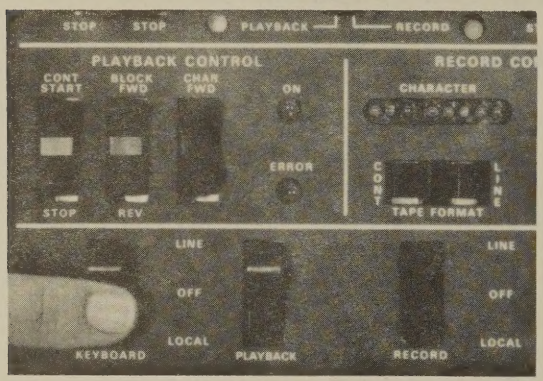
Keep the terminal in *local* until you are ready to transmit or receive data from a remote terminal or computer (pages 41 through 49).

SETTING THE MAJOR DEVICES TO LOCAL/LINE/OFF

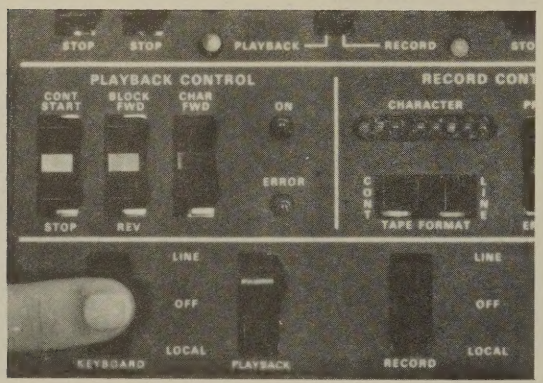
The *major devices* on the data terminal are the keyboard, playback function, record function, and the printer. The primary switches controlling the major devices are located on the upper unit control and display panel.



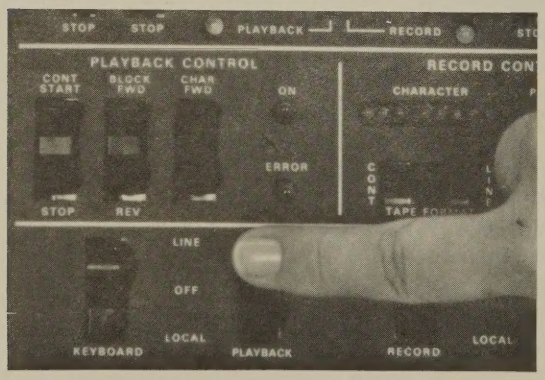
1. Set KEYBOARD to LINE to connect the keyboard device to the line loop. (For an explanation of line loop and local loop, see Section IV, page 62.)



2. Set KEYBOARD to LOCAL to connect the keyboard device to the local loop.

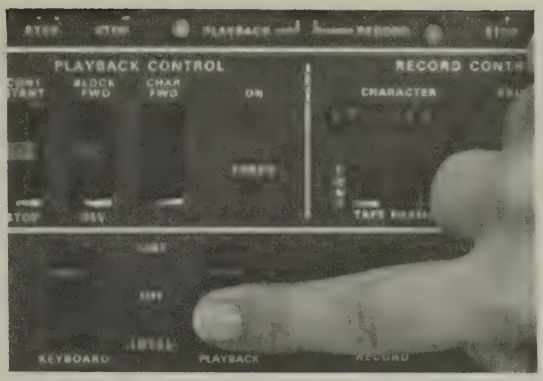


3. Set KEYBOARD to OFF to disconnect the keyboard device from the line and local loops.



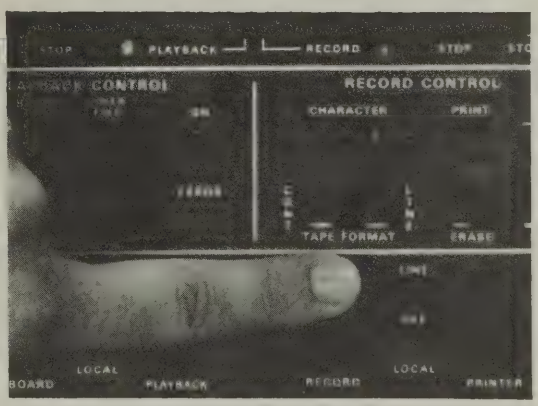
4. Set PLAYBACK to LINE to connect the playback device (transport) to the line loop.

5. Set PLAYBACK to LOCAL to connect the playback device (transport) to the local loop.

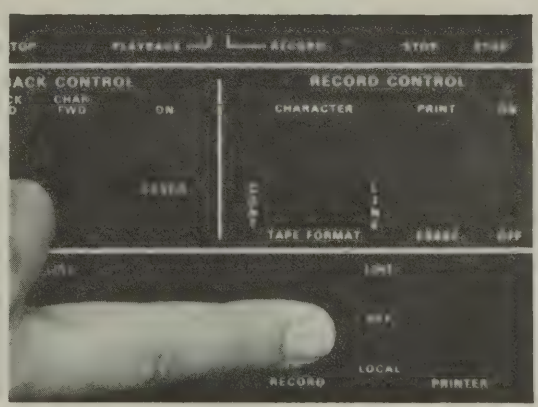


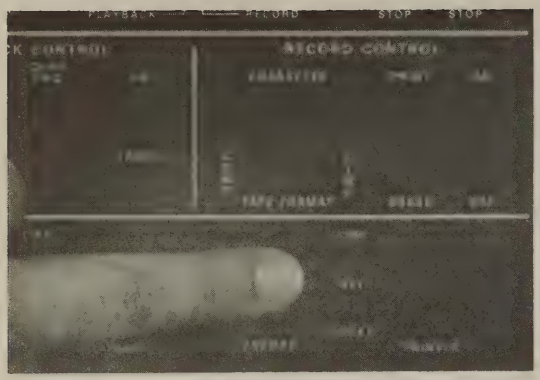
6. Set PLAYBACK to OFF to disconnect the playback device (transport) from the line and local loops.

7. Set RECORD to LINE to connect the record device (transport) to the line loop.

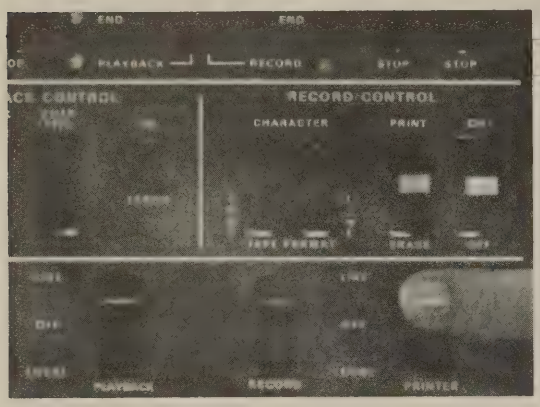


8. Set RECORD to LOCAL to connect the record device (transport) to the local loop.

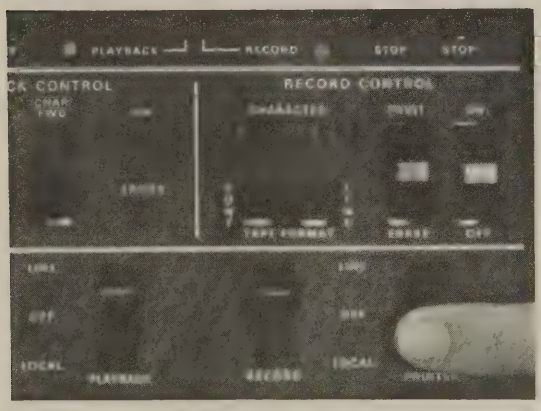




9. Set RECORD to OFF to disconnect the record device (transport) from the line and local loops.



10. Set PRINTER to LINE to connect the printer device to the line loop.



11. Set PRINTER to LOCAL to connect the printer device to the local loop.

12. Set PRINTER to OFF to disconnect the printer device from the line and local loops.

LOADING PAPER

CAUTION

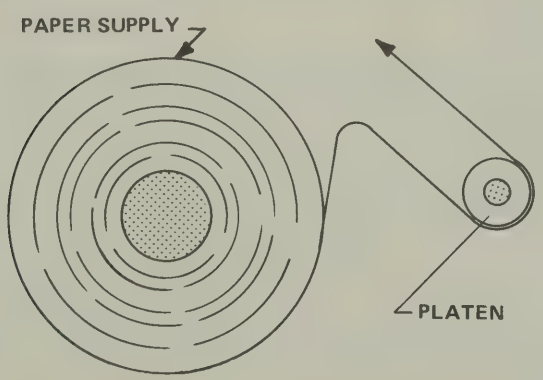
To prevent damage to the printhead and platen, do not type on the Model 742 without paper on the platen.

1. Set the POWER switch to OFF; the adjacent indicator lamp will go out.

2. Open the terminal cover by grasping the edges of the cover on both sides, then abruptly pull up.

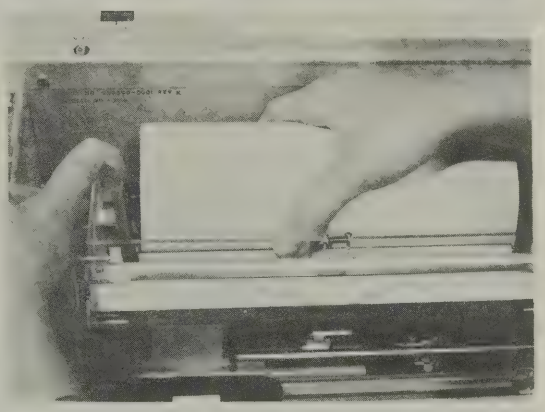
3. Lift the window/pinch roller. Do not turn the platen unless the roller is lifted.

4. Place a fresh roll of TI Silent 700 printing paper on the supply roll holders so that the paper feeds off the bottom of the roll as shown in the drawing below. Check that the roll can rotate freely.



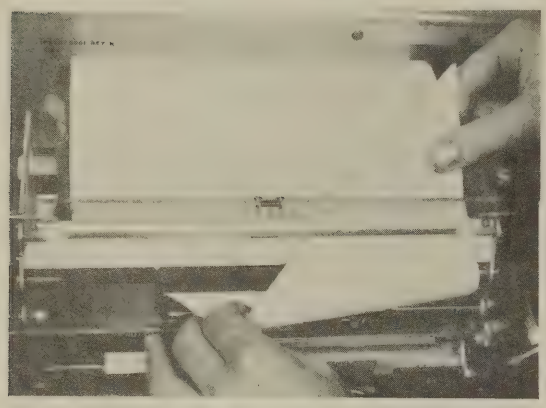
IMPORTANT NOTE

The warranty and/or service contract on the thermal printhead is subject to nullification if the thermal printing paper used in the Silent 700 Data Terminal does not meet TI Specification 213714.

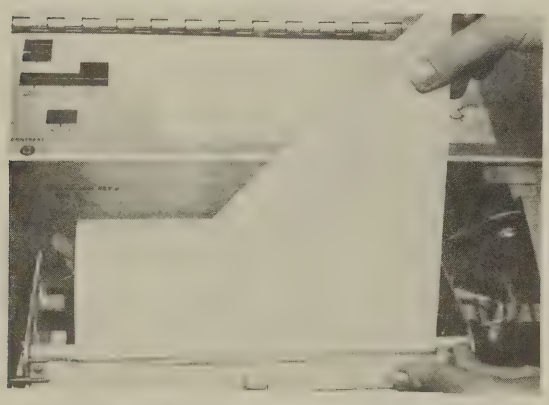


HINT

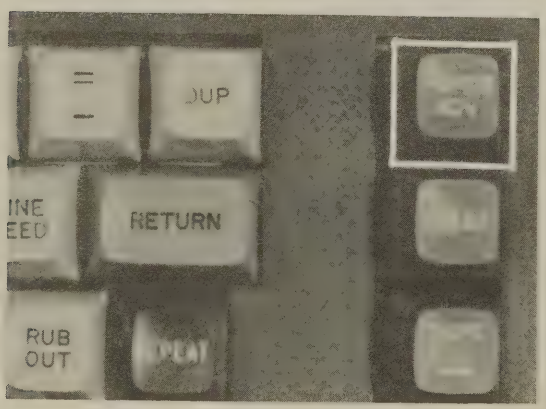
Fold a "vee" edge in the paper to more easily perform the next step.



5. Feed the paper down the paper chute and around the platen; then pull the paper up and under the window/pinch roller and between the paper guides. Be sure the paper is centered in the paper chute.



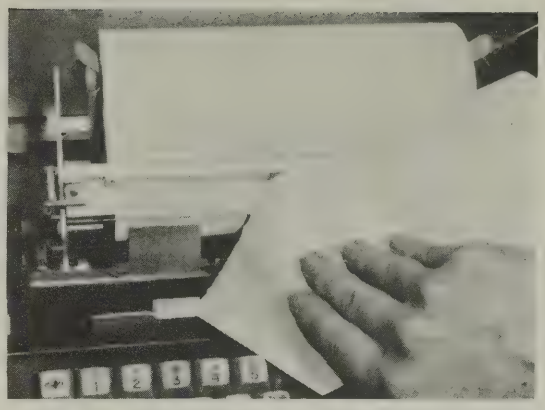
6. Lower the window/pinch roller, checking that the paper is between the pinch roller and the platen.



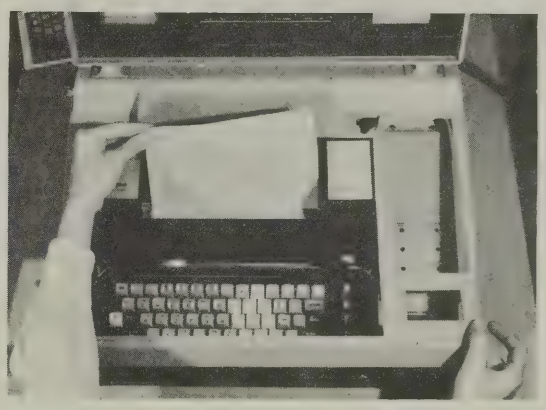
7. Set the POWER switch to ON; the adjacent indicator lamp will illuminate.

8. Press the PAPER ADV key. Be sure the paper feeds smoothly and straight.

9. Tear off excess paper by pulling one side forward and down over the tear off edge of the window.



10. Close the terminal cover (the cover will snap shut) and check that the paper feeds through the slot in the cover. When long enough, the paper should feed through the opening between the upper and lower units.



Before proceeding to other operations, you may wish to type a few lines on your Model 742 terminal to get the feel of the keyboard and see the print it produces. Turn to the SUPPLEMENT, Exercise 1, for material to type.★

INSTALLING AND REMOVING TAPE CASSETTES

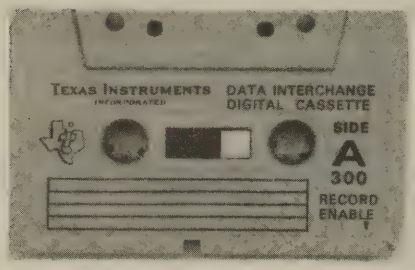
As explained in the Introduction, data tape cassettes are very similar to audio tape cassettes except that data cassettes are designed to record and play back data rather than sound. (By the way, data tape cassettes are much higher quality than audio tape cassettes, so do not try your home tape cassettes on the Model 742 since they will not function properly.)

Data may be recorded on or played back from one of the two tape sides, called ***tracks*** on each tape cassette. If you wish to record on or play back ***Side A***, turn the cassette so that the side labeled ***Side A*** is facing you (tape side up) before installing the cassette into the transport. If you wish to record on or play back from ***Side B*** turn the cassette so that the side labeled ***Side B*** is facing you (tape side up) before installing the cassette into the transport.

Before installing a tape cassette, you should first learn about BOT/EOT and ***write tabs.***

★SUPPLEMENT, Exercise 1, page 3

Beginning of Tape



End of Tape

Beginning-of-Tape (BOT) and End-of-Tape (EOT)

If you were to unwind all the tape in a cassette, you would find a long piece of brown magnetic tape with a short piece of clear tape, called ***clear leader,*** at both ends. The magnetic tape between the two pieces of clear leader is the only part of the tape on which data can be recorded. There is a beginning-of-tape (BOT) marker (hole), located approximately 18 inches from the union of the clear leader and magnetic tape at the beginning of the entire tape, which marks the point on tape after which recording of data may begin. An end-of-tape (EOT) marker (hole), located approximately 18 inches from the union of the clear leader and magnetic tape at the end of the entire tape, marks the point on tape near where recording of data ceases. Since there are two ***tracks*** to a tape cassette and you must physically reverse the entire cassette to obtain the opposite track, one track's EOT marker is the opposite track's BOT marker and vice versa. You can visually check to determine if a particular side (track) is nearer to the beginning-of-tape or end-of-tape.

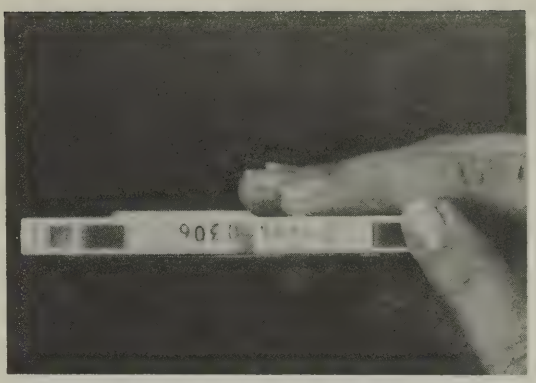
Write Tabs

As in audio cassettes, all data tape cassettes are provided with write tabs (labeled RECORD ENABLE on TI tape cassettes, Part No. 960333) to prevent accidentally recording over data previously recorded. Before inserting a cassette into a tape transport, check the status of the write tabs as follows:

1. Grasp the cassette so that the label of the desired side is facing you, and the tape side is up.

2. Rotate the cassette so that the tape side is down. See the two openings on the bottom of the cassette?

3. To enable recording on that side of the tape (Side A or Side B), *cover* the opening to the right.



–OR–

4. To prevent any accidental attempt to record on that side of the tape, *uncover* the opening to the right.

HINT

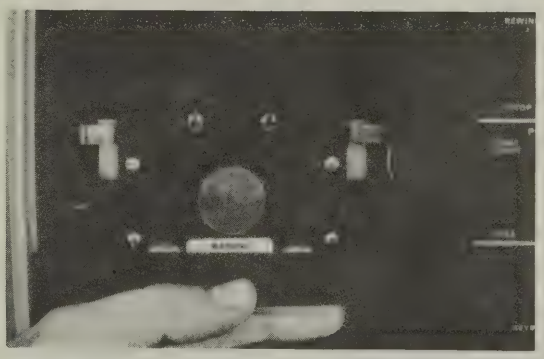
To remember which opening to use, think *right* to *write protect.*

NOTE

Tape cassette manufacturers use different methods to cover the openings. Check with your supervisor if the method is not apparent.

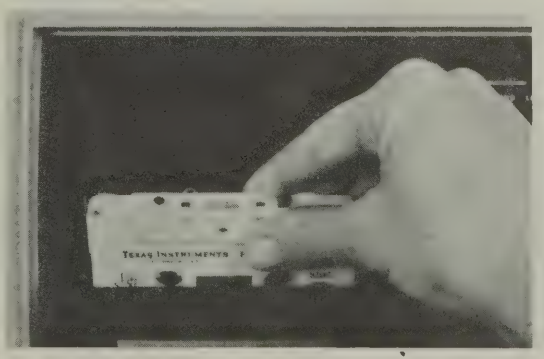
Installing a Tape Cassette

1. Open the CASSETTE 1 transport door by gently pulling down on the handle.



2. Hold the tape cassette in your hand so that the label of the desired side (Side A or Side B) is facing you and the tape side is up.

3. Grasp the cassette by the top with your thumb and first two fingers and insert the cassette on the cassette retainers of the CASSETTE 1 transport.

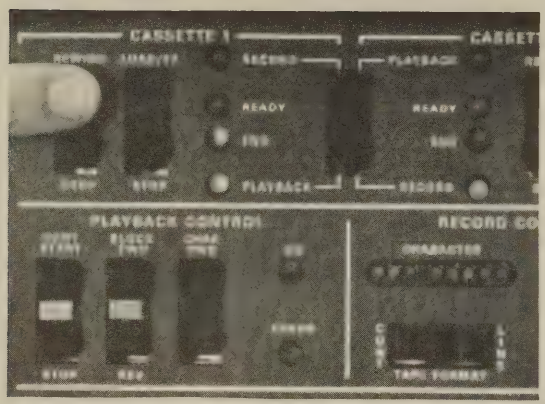


4. Press the cassette down and in so that the capstan and reel rotors fit into the matching holes in the cassette.

5. Gently push the CASSETTE 1 transport door to close.

NOTE

In future operations, steps 1 through 5 will be referred to as ***inserting a tape cassette.***



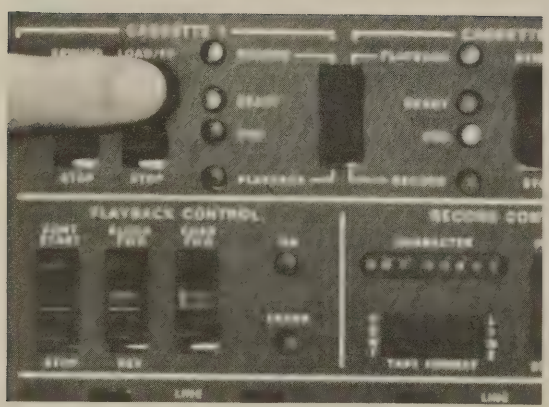
6. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate (clear leader has been sensed).

NOTE

You need not perform the above step if the tape is already rewound to BOT clear leader. If the tape does not move and the END indicator is illuminated, then the tape is already on BOT clear leader and you can proceed to the next step. If the tape will not "rewind" (the END indicator does not illuminate), one of the following has occurred:

(1) CASSETTE 1 is set to PLAYBACK and PLAYBACK CONTROL is ON (PLAYBACK CONTROL ON indicator is illuminated). If this occurs, press the (CONT) STOP switch; then repeat step 6.

(2) CASSETTE 1 is set to RECORD and RECORD CONTROL is ON (RECORD CONTROL ON indicator is illuminated). If this occurs, press the RECORD CONTROL/OFF switch; then repeat step 6.



7. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate. The BOT marker has been sensed, and the transport is ready to record or play back data.

NOTES

If the tape will not "load" (the READY indicator does not illuminate), one of the following has occurred:

(1) CASSETTE 1 is set to PLAYBACK, PLAYBACK is set to LINE and the terminal ON LINE switch is set to OFF. If this occurs, either set PLAYBACK to LOCAL if local operation is desired or set the terminal ON LINE switch to ON LINE if line operation is desired.

(2) CASSETTE 1 is set to PLAYBACK and PLAYBACK is set to OFF. If this occurs, set PLAYBACK to either LINE or LOCAL as desired.

(3) CASSETTE 1 is set to RECORD, the RECORD switch is set to LINE, and the terminal ON LINE switch is set to OFF. If this occurs, either set RECORD to LOCAL if local operation is desired, or set the terminal ON LINE switch to ON LINE if line operation is desired.

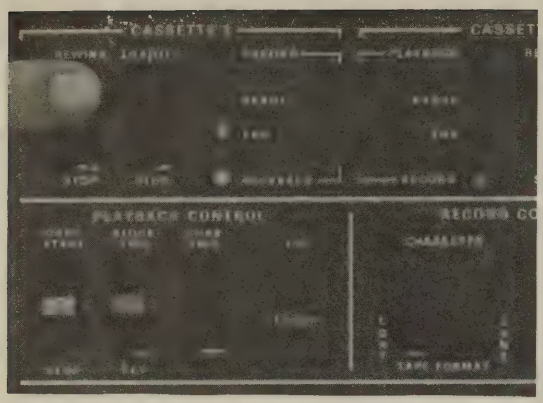
(4) CASSETTE 1 is set to RECORD, and the RECORD switch is set to OFF. If this occurs, set RECORD to either LINE or LOCAL as desired.

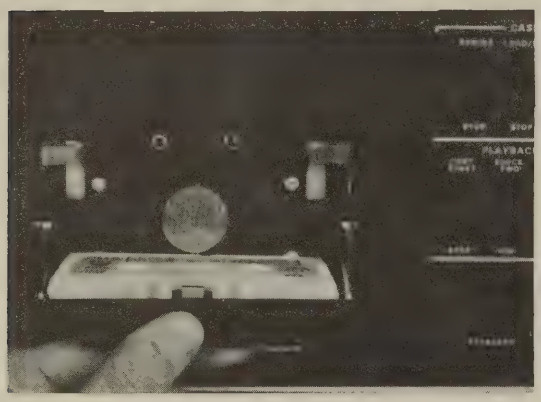
(5) CASSETTE 1 is set to RECORD and the desired side of the tape is "write protected." The Model 742 will not permit you to "load" a write-protected tape when the cassette transport is set up to record. If this occurs, perform one of the following:

(a) If you wish to record on that tape side, rewind the tape, remove it from the transport, and cover the right opening, then return to step 1.

—OR—

(b) If you do not wish to record on that tape side, either rewind the tape, remove it from the transport and turn the cassette around, then return to step 1; or rewind the tape, then return to step 1 using a new cassette.





Removing a Cassette

1. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.

2. Open the CASSETTE 1 transport door downward to the first stop. A quick down motion will "pop" the cassette out of the transport.

3. Close the cassette transport door and keep the door closed when the transport is not in use.★

NOTE

Always rewind the tape before removing a cassette or switching off power to ensure that no data "glitches" are recorded by accident.

CAUTION

Dirt and dust are enemies of magnetic tape; be sure that usable tape is rewound into the cassette housing where it is protected. In addition, when not in use, always return a cassette to its plastic container.

★SUPPLEMENT, Exercise 2, page 5

RECORDING ON A TAPE CASSETTE FROM THE KEYBOARD (NORMAL MODE)

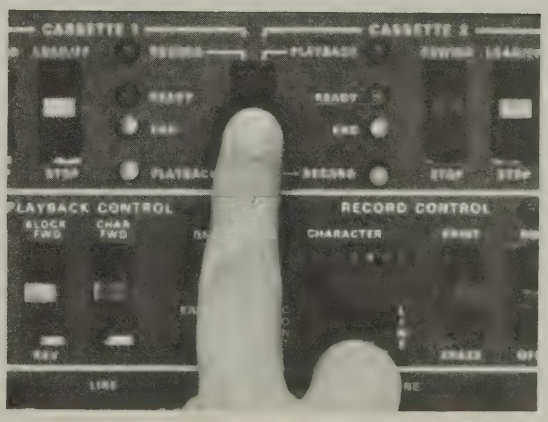
Recording on tape the data you type from the keyboard is very easy. In fact, before you finish typing a line, you have a chance to correct or change any characters in that line or retype the entire line *before* the line is recorded on tape. This is possible because the Model 742 is equipped with an internal storage area, 86 characters long, called the *record buffer*. The record buffer is capable of storing up to one printed line (80 characters) plus 6 control characters; e.g., backspace, linefeed, and carriage return. Characters you type from the keyboard are entered into the record buffer one at a time as well as printed out on paper (unless the upper unit PRINTER switch is OFF). To tell when you are entering characters into the record buffer, watch the indicators in the upper unit CHARACTER display change configuration each time you press a different key on the keyboard.

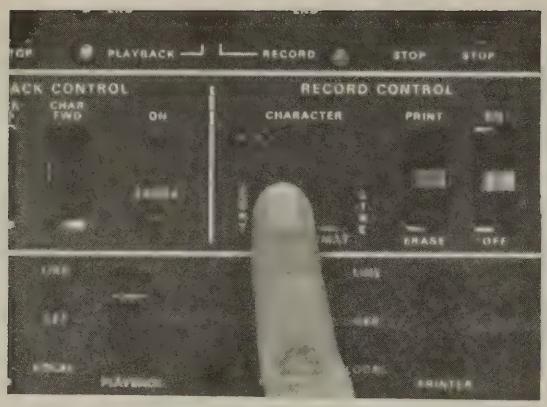
The record buffer corresponds to one *block* or *record* on tape (each has a maximum capacity of 86 characters). However, if you only partially fill the record buffer before recording, the corresponding block on tape will be only partially filled with data. Whether or not a block is partially or completely filled with characters depends on the setting of the TAPE FORMAT switch and your pressing either the RETURN key or the RECORD CONTROL/OFF switch. If 86 characters are not entered into the record buffer, the remainder of the block is filled with *nulls* (blank characters).

Now let's learn how to record data.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to OFF (this switch position is not important).
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to RECORD.



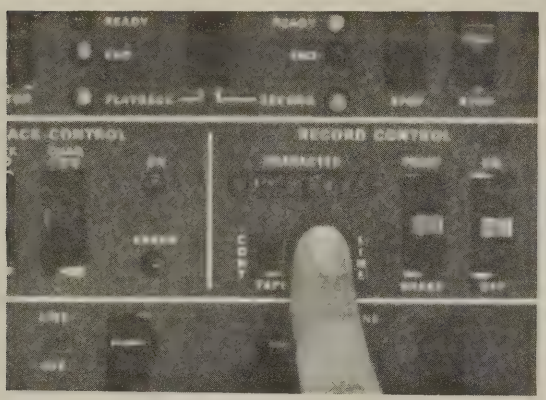


6. Set TAPE FORMAT to CONT for maximum data storage on tape.

NOTE

One block of data on tape may correspond to several printed lines. (Unless the RECORD CONTROL switch is set to OFF when the record buffer is only partially filled with data, the block is always filled with data.)

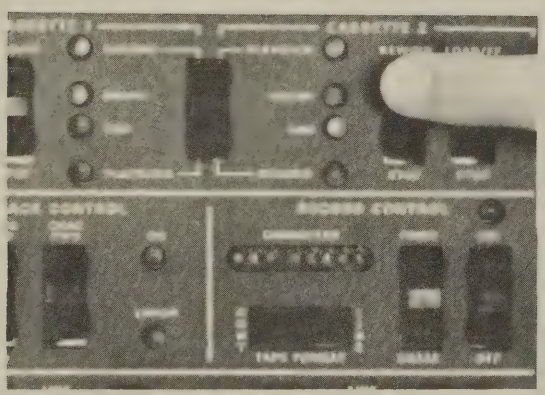
–OR–



7. Set TAPE FORMAT to LINE for less data storage capacity, but easier editing.

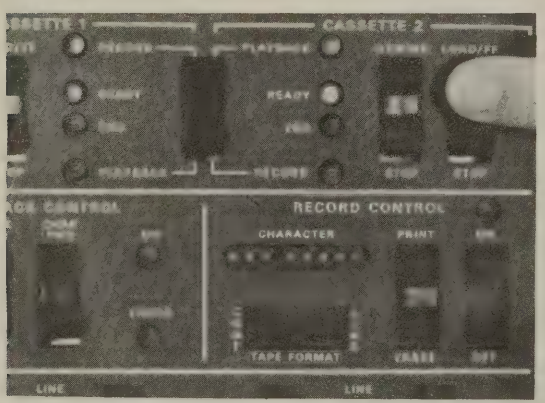
NOTE

One block of data on tape corresponds to one printed line. (The block may be partially filled with data.)



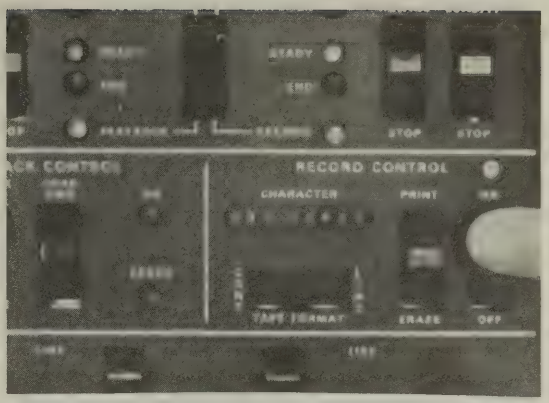
8. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record data faces you.

9. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.



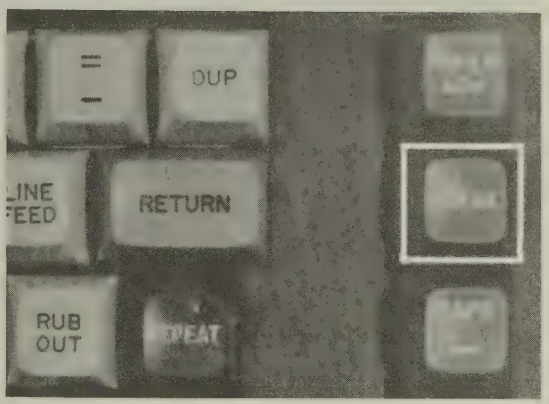
10. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

11. Press the RECORD CONTROL/ON switch; the adjacent indicator will illuminate.



Operation

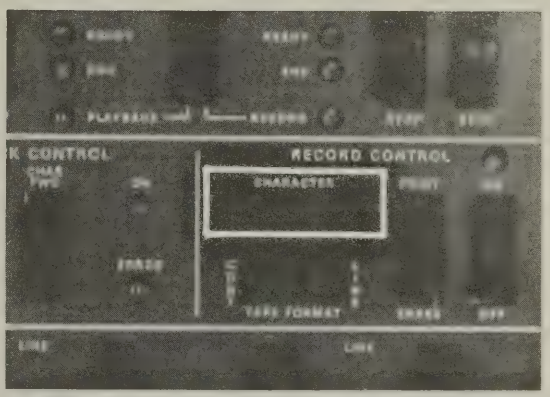
12. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

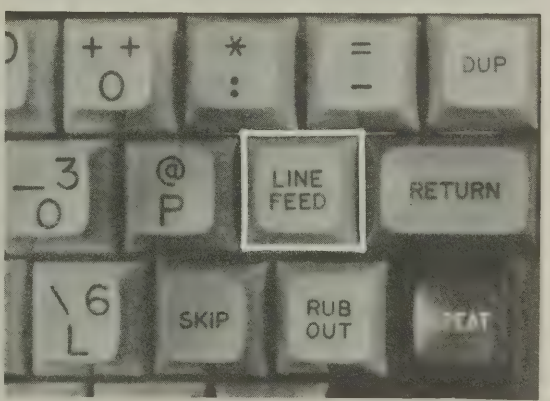


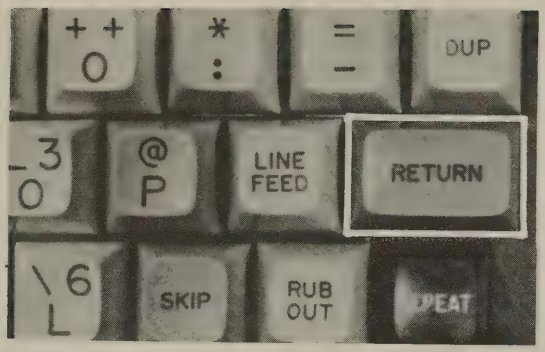
13. Begin typing data from the keyboard; data will be entered into the record buffer character-by-character. Each time you type a new character a different configuration will illuminate in the CHARACTER display, indicating a new character has been entered into the record buffer. If you wish the tape to be recorded in conventional typewriter format, press the LINE FEED key, then the RETURN key at the end of each line. (See the next two steps which describe use of the RETURN key.

NOTE

The CHARACTER display is merely a visible indication that data is in the record buffer. You do not have to learn how to read the ASCII codes represented in the display.

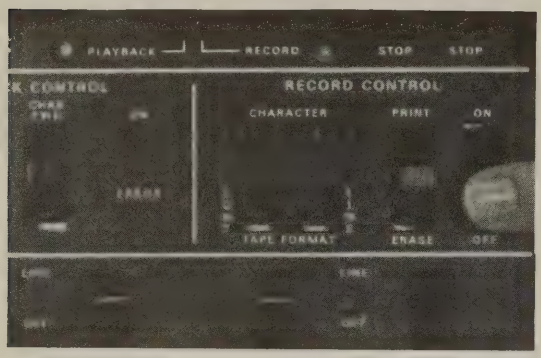






14. Press the RETURN key or the RECORD CONTROL/OFF switch to record a block of data on CASSETTE 2 when TAPE FORMAT is set to LINE. After you press the RETURN key or the RECORD CONTROL/OFF switch, the CHARACTER display lamps will go out, indicating the block is recorded on tape and the record buffer is empty.

–OR–

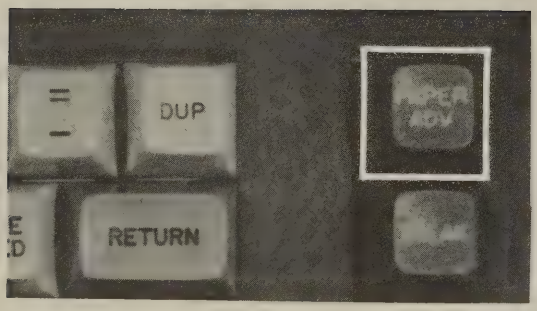


15. Press the RECORD CONTROL/OFF switch if you need to record a partial block of data on CASSETTE 2 when TAPE FORMAT is set to CONT. After you press the RECORD CONTROL/OFF switch the CHARACTER display lights will go out, indicating the block is recorded on tape and the record buffer is empty. Pressing the RETURN key will not initiate recording in the CONT tape format.

NOTE

In either case (LINE or CONT), data recording is automatically initiated when the 86th character is entered into the record buffer. The CHARACTER display lights will go out after you enter the 86th character.

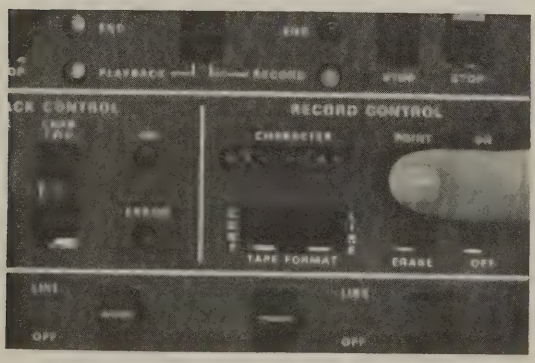
To inspect the contents of the record buffer before recording:



16. Press the PAPER ADV key to start a new line.

CAUTION

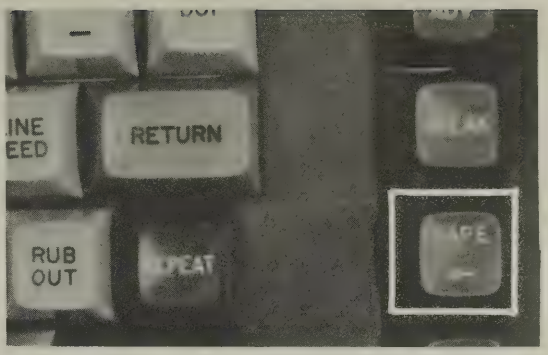
Do not press the LINE FEED and RETURN keys because their corresponding codes will be entered into the record buffer. In fact, the RETURN key will cause recording if TAPE FORMAT is set to LINE.

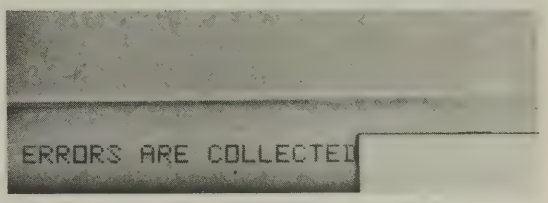


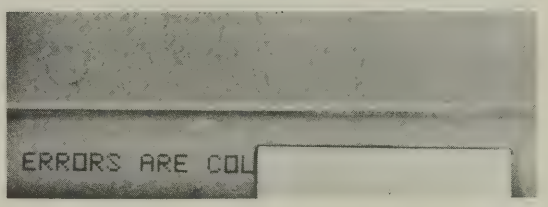
17. Press the RECORD CONTROL/PRINT switch; the contents of the record buffer will be printed out but not recorded.

To correct an error in a block before recording:

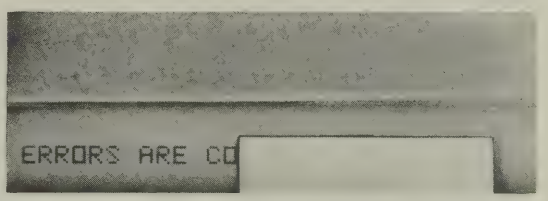
18. Use the TAPE ← key to back up the printhead until the incorrect character is visible directly to the left of the printhead. Each time you press the TAPE ← key, a different configuration of lights will turn on in the CHARACTER display, indicating that a different character (corresponding to the one on the printer) is being referenced in the record buffer.





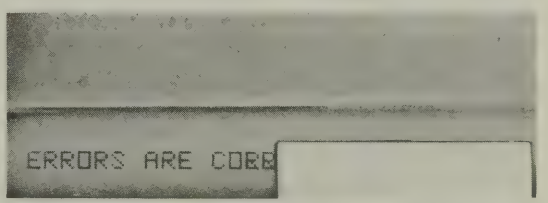


19. Press the TAPE ← key once more; the printhead will cover the incorrect character.



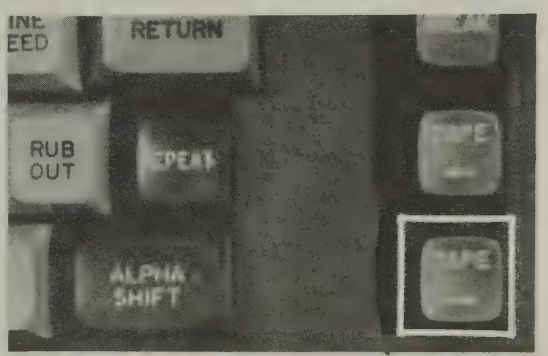
20. Strike over the incorrect character on the printer with the correct one; the corresponding character in the record buffer will also be corrected.

21. Type the remainder of the line.



–OR–

22. Use the TAPE → key to return the printhead to the point where you first pressed the TAPE ← key. You will also return to the same point in the record buffer.



To retype the entire block before recording:

23. Press the RECORD CONTROL/ERASE switch to erase the contents of the record buffer; the CHARACTER display lights will go out, indicating the record buffer is empty.

24. Press the PAPER ADV key to start a new line.

25. Retype the entire block.★

PLAYING BACK A TAPE CASSETTE TO THE PRINTER (NORMAL MODE)

When data is played back from a cassette, it also is entered into a buffer called the *playback buffer*. When you start playback, an entire block of data is entered into the playback buffer. Then, depending on how you started playback (i.e., with the CONT START switch or SKIP key, BLOCK FWD, or CHAR FWD switch described below), characters are read out of the playback buffer, either continuously, one block at a time, or one character at a time to the printer, communication line, and/or the record buffer.

Terminal Setup

1. Set KEYBOARD to LOCAL.

2. Set PLAYBACK to LOCAL.

3. Set RECORD to OFF (this switch position is not important).

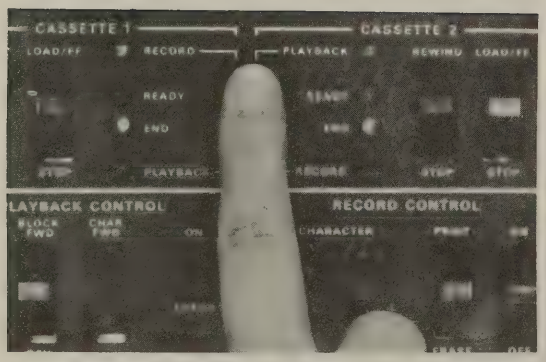
4. Set PRINTER to LOCAL.

5. Set CASSETTE 2 to PLAYBACK.

6. Insert the tape cassette to be played back into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.

7. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

8. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.



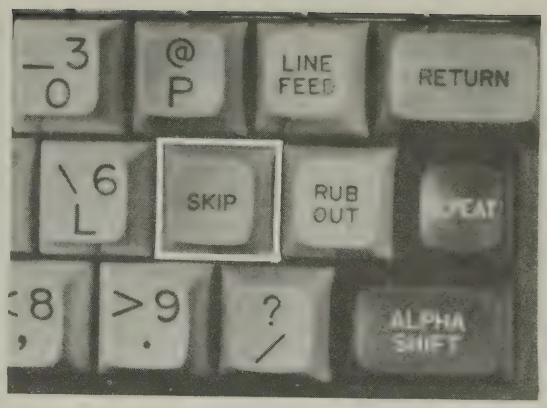
★SUPPLEMENT, Exercises 3A and 3B, pages 8 and 11

Operation

9. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

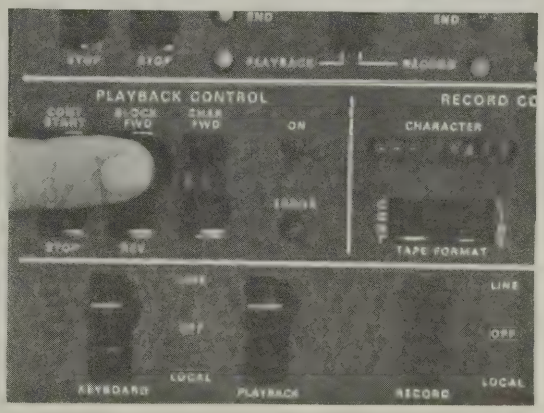
10. Press the SKIP key or the upper unit CONT START switch to play back continuously.

–OR–

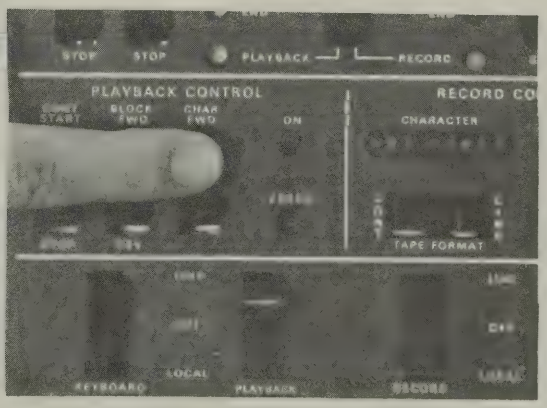


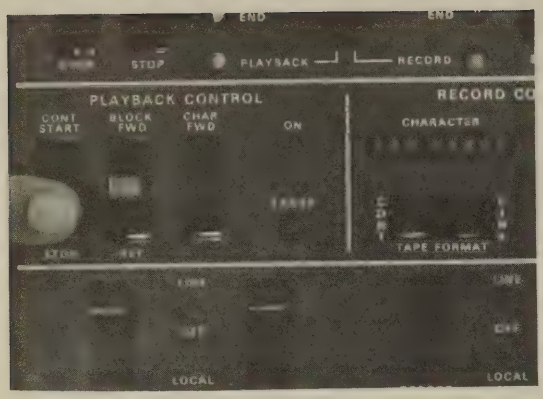
11. Press the BLOCK FWD switch to play back one block at a time.

–OR–



12. Press the CHAR FWD switch to play back one character at a time.



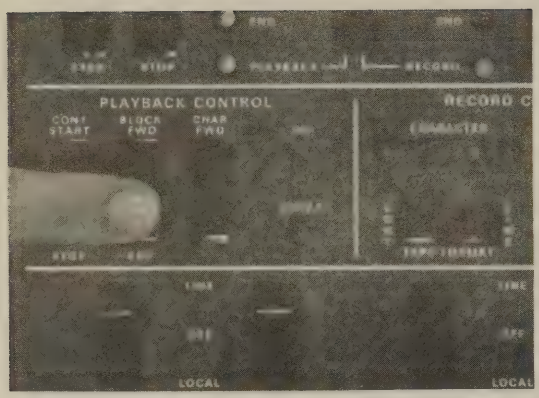


13. Press the (CONT) STOP switch to stop playback.

To recover from a playback error:

At times dust, dirt or wrinkles on the tape may cause a playback error. If the upper unit ERROR indicator illuminates during a search, perform one of the following:

Replay the block if playback of that block is necessary:



14. Press the BLOCK REV switch.

15. Press the CONT START switch to reread the block in question. Playback will continue if the error does not recur.

–OR–

16. Press the BLOCK FWD switch to reread the block in question. Playback will stop prior to reading the next block.

Skip the block if playback of that block is not necessary:

17. Press the BLOCK FWD switch. Playback will bypass the block in error.

Correct the block if that block is important and the playback error recurs:

18. Refer to Section III, pages 50 through 52.

Call your supervisor for additional instructions.★

★SUPPLEMENT, Exercise 4, page 12

SEARCHING A TAPE CASSETTE

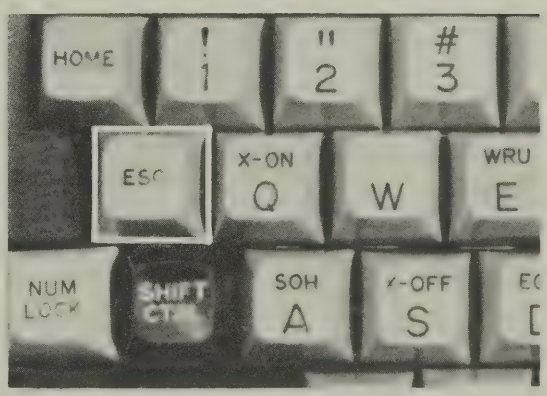
At times you may need to locate a string of characters on tape. Perhaps they are in error and you need to correct them (Section III) or perhaps the characters constitute the name of a format program you need to execute (Section II). You could play back the tape and watch for the characters to be printed out on the printer. But if you know what the characters are, here is an easier way. . .

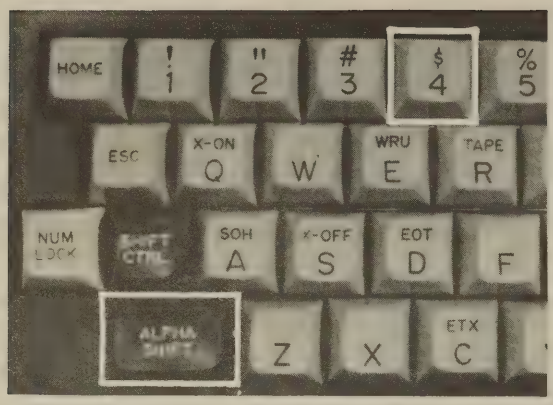
Terminal Setup

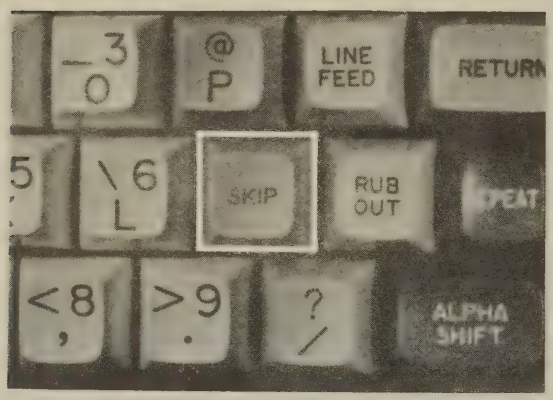
1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to OFF (this switch position is not important).
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to PLAYBACK.
6. Insert the tape cassette to be searched into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.
7. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
8. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation

9. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.
10. Press the ESC key.







11. Press the $ key; the terminal will respond with a line feed and a carriage return.

12. Type in the data you wish to locate on CASSETTE 2. This data is called a search identifier (ID) and can be from 1 to 16 characters in length; the search ID characters should be unique. Control characters, including line feed and carriage return, are ignored and not counted as search characters.

    NOTE

    If you make an error in typing in the search ID, return to step 9 (the BREAK key will fix everything).

13. Press the SKIP key to search the tape continuously.

14. When the search ID is located on tape, the terminal will signal with a line feed and a carriage return.

    NOTE

    If a "P" is printed out, check that the terminal is correctly set up (steps 1 through 8).

To play back the data following the search ID:

15. Press the SKIP key or the CONT START or the BLOCK FWD switch as desired.

To play back the search ID or any data preceding the search ID, you need to back up the tape:

16. Press BLOCK REV several times; then press the SKIP key or the CONT START or the BLOCK FWD switch as desired.

To continue searching for the same search ID (contained on tape more than once), start the search again as follows:

17. Press the ESC key.

18. Press the $ key.

19. Press the SKIP key; the tape will be searched continuously. There is no need to retype the same search ID.

To search for a new search ID:

20. Begin the search operation at step 7.

To terminate a search:

21. Press the BREAK key; the terminal will respond with a line feed and a carriage return.

To recover from a playback error:

At times dust, dirt, or wrinkles on the tape may cause a playback error. If the upper unit ERROR indicator illuminates during a search, perform one of the following:

Replay the block if the search ID may be in that block:

22. Press the BLOCK REV switch twice.

23. Press the CHAR FWD switch; the search will continue if the error does not recur.

Skip the block if the search ID is not in that block:

24. Press the CHAR FWD switch; the search will continue and bypass the block in error.

Call your supervisor for additional instructions.★

DUPLICATING A TAPE CASSETTE

In the duplication process, data is transferred from the playback cassette to the playback buffer, from the playback buffer to the record buffer, then from the record buffer to the record cassette. The playback cassette remains untouched.

Terminal Setup

1. Set KEYBOARD to OFF (this switch position is not important as long as you do *not* press any keys).

2. Set PLAYBACK to LOCAL.

3. Set RECORD to LOCAL.

4. Set PRINTER to LOCAL to print while duplicating.

—OR—

5. Set PRINTER to OFF to prohibit printing while duplicating.

★SUPPLEMENT, Exercise 5, page 14

NOTE

The duplication process is much faster if the printer is off.

6. Set CASSETTE 2 to PLAYBACK; CASSETTE 1 will be in RECORD.

7. Set TAPE FORMAT to CONT for maximum storage capacity.

–OR–

8. Set TAPE FORMAT to LINE for less storage capacity, but easier editing capability.

NOTE

The TAPE FORMAT switch determines the format of the record cassette; in this case, CASSETTE 1. Therefore, if you wish to convert a tape from one tape format to another, merely set this switch to the desired format, and the conversion will occur automatically with the duplication process.

9. Insert the tape cassette to be duplicated into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.

10. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

11. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

12. Insert a blank tape cassette into the CASSETTE 1 transport. Be sure the cassette side (Side A or Side B) on which you wish to record faces you.

13. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.

14. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

15. Press the RECORD CONTROL/ON switch; the adjacent indicator will illuminate.

Operation

16. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

17. Press CONT START; data on CASSETTE 2 will be duplicated on CASSETTE 1 until the END indicator illuminates, (CONT) STOP is pressed or a "playback off" character is encountered on the playback tape.

NOTE

The flickering CHARACTER display lights indicate that tape duplication is in progress.

To recover from a playback error:

If a playback error occurs (the upper unit ERROR indicator illuminates) perform one of the following:

Replay the block:

18. Press the BLOCK REV switch.

19. Press the CHAR FWD switch; duplication will continue if the error does not recur.

Correct the block if that block is important and the playback error recurs:

20. Refer to Section III, pages 50 through 52.

Call your supervisor for additional instructions.★

ERASING A TAPE CASSETTE

It is not really necessary to erase a previously used tape before recording. If data is recorded on the tape, you can record over it with new data. However, you'll never know what is on the tape beyond the point where you stopped recording new data. For this reason, it is a good practice to erase a tape before reuse. Be sure the old data is not important; if a tape cassette is *write protected*, it cannot be erased.

Terminal Setup

1. Set KEYBOARD to OFF (this switch position is not important).

2. Set PLAYBACK to OFF (this switch position is not important).

3. Set RECORD to LOCAL.

4. Set PRINTER to OFF (this switch position is not important).

★SUPPLEMENT, Exercise 6, page 15

5. Set CASSETTE 1 to RECORD.

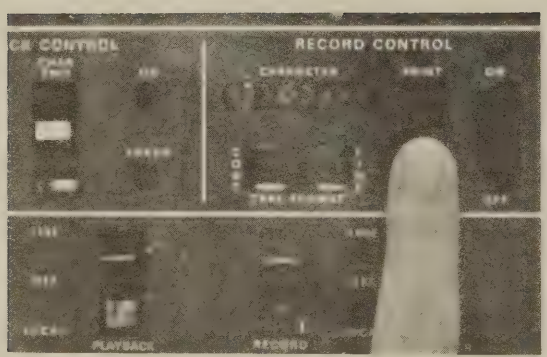
6. Insert the tape cassette to be erased into the CASSETTE 1 transport. Be sure the desired side (Side A or Side B) faces you.

7. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.

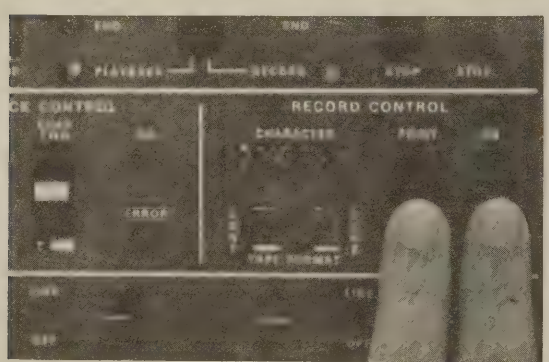
8. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation

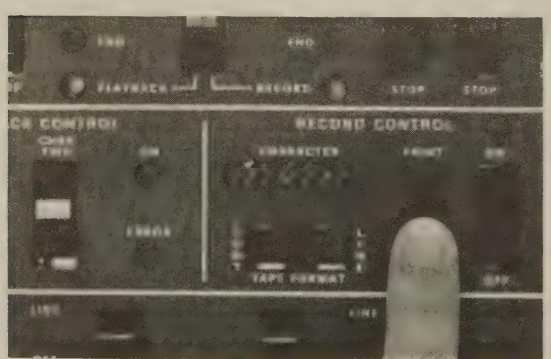
9. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.



10. Press and hold the RECORD CONTROL/ERASE switch.



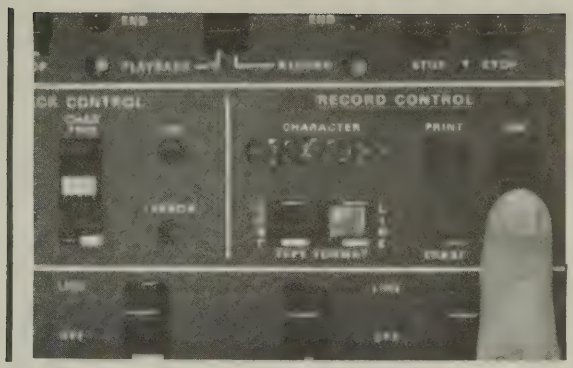
11. Press the RECORD CONTROL/OFF switch.



12. Release the RECORD CONTROL/OFF switch; erasure will commence.

13. Release the RECORD CONTROL/ERASE switch.

14. To terminate tape erasure before the end of tape, press the RECORD CONTROL/OFF switch again.★



★SUPPLEMENT, Exercise 7, page 16

SECTION II
OPERATING THE TERMINAL UNDER FORMAT PROGRAM CONTROL

All operations described so far (Section I) are accomplished in the NORMAL MODE. *You* the operator, have been in control of all the terminal's basic functions. In this section, you will learn how to operate the Model 742 in the EXECUTE MODE in which a *format program* resident in memory controls all the terminal's basic functions. The format program will guide you in your data entry and indicate to you when you make an error.

In addition to the playback and record buffers, another buffer, called the entry buffer, is used in the EXECUTE MODE (only). In fact, the entry buffer is the center of all activity in the EXECUTE MODE. Data you type in from the keyboard is entered into the entry buffer (rather than the record buffer as in the NORMAL MODE) where it is formatted and checked by the memory resident format program.

After a data block is complete and correct, it is transferred to the record buffer by the format program. Then the data block is recorded on tape. You have *no* control over data while it is in the record buffer as you do in the NORMAL MODE. Instead of using the TAPE ← and TAPE → keys for correcting errors, you will learn how to use the HOME and RUBOUT keys.

The entry buffer (one block) may be divided into sections, called *fields*, by the format program. These fields correspond to entries you type in from the keyboard in response to prompts, and can be from one to 86 characters in length. For example, the entry buffer may contain two fields, each 43 characters long; or three fields, one 40, another 20, and the third 26 characters long; or one field, 86 characters long, etc. The purpose of fields in the entry buffer is to provide points to which you can return to correct an error without having to return to the beginning of the buffer (block).

If you make an error somewhere in the present *field*, pressing the RUBOUT key returns you to the beginning of the present field. If you discover an error in a previous field but in the present *block* (before recording), pressing the HOME key returns you to the beginning of the present block. After you use a particular format several times, you will learn where the blocks and fields begin.

One final point about the entry buffer: unlike the playback and record buffers which are erased after playback and record operations, respectively, the entry buffer retains the data, even after it is read into the record buffer and then recorded. The only way data is changed in the entry buffer is by reentering new data from the keyboard, thus replacing the last block in the entry buffer.

An example may help you to better understand how the entry buffer operates:

Suppose the following prompts are printed out:

```
LAST NAME:              FIRST NAME:              MIDDLE INITIAL:
CITY:              STATE:              ZIP:
TELEPHONE:     -     SOCIAL SECURITY:     -  -
MARRIED:     # OF CHILDREN:
```

And you type the following responses:

```
      SMITH                    JOHN                         R
   HOUSTON              TEXAS              77017
      456 7345                 457 72 3794
     Y                  2
```

The responses are entered into the entry buffer character by character. After the "1" is typed (last entry), the block recorded on tape by the format program *may** look like the following:

```
SMITH        JOHN         RHOUSTON      TEXAS        770174567345457723794Y2
```

This section also describes error recovery procedures for operating the Model 742 under format program control. When the terminal "beeps" and the keyboard locks, refer to *Correcting Errors*, pages 36 through 38. If *N, P, R,* or *T* are printed out, refer to *Error Messages*, pages 39 through 41.

*Remember, the format program determines the format of the data in the entry buffer. Characters may be added, deleted, or substituted to make the data more usable by the central computer; and some of the characters may be nonprintable characters. So if you print out the entry buffer or play back the tape on which the data was recorded, you may find the data looks quite different from the data you entered from the keyboard and may include some nonprintable characters which are invisible to you.

LOADING AND EXECUTING A FORMAT PROGRAM FROM A TAPE CASSETTE

Perform the following steps if the desired format program is not in memory from a previous loading.

NOTE

The format program will not be retained in memory if any of the following has occurred since the last loading: (1) POWER has been switched OFF, (2) the terminal has been switched ON LINE and the format program uses extended memory (ask your supervisor), or (3) an erroneous format program is resident in memory.

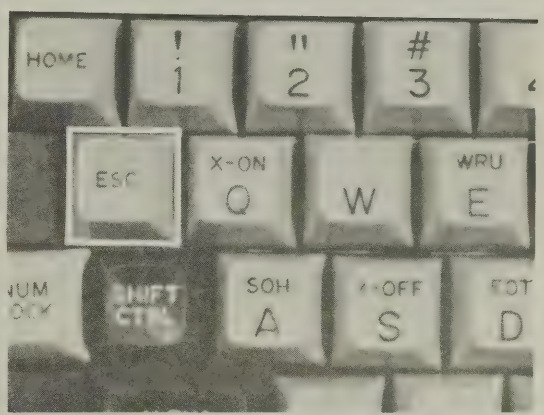
Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 1 to PLAYBACK.
6. Set TAPE FORMAT to LINE.
7. Insert the format tape cassette into the CASSETTE 1 transport. Be sure the cassette side (Side A or Side B) containing the desired format program faces you.
8. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
9. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.
10. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.
11. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
12. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

13. If the desired program is not at the beginning of the format tape, perform a search (steps 9 through 14, page 23) using the name of the desired program as the search ID.

14. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

15. Press the ESC key.

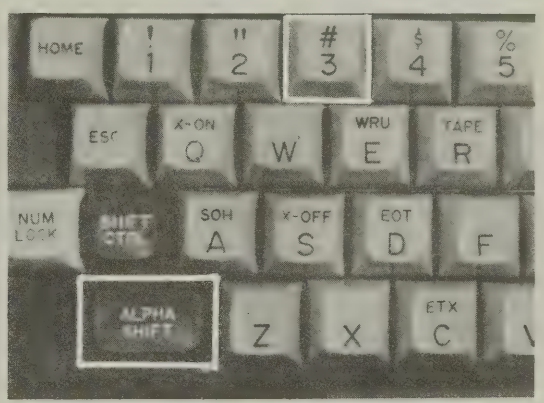


16. Press the # key; the Model 742 will load the format program into memory from CASSETTE 1, then enter the EXECUTE MODE, and print out the first prompt.

NOTE

You can tell if the format program is being loaded into memory by the flickering PLAYBACK ON light.

17. Begin typing data as described in *Entering Data,* page 35.



EXECUTING A FORMAT PROGRAM RESIDENT IN MEMORY

Perform the following steps if the desired format program is already in memory from a previous loading.

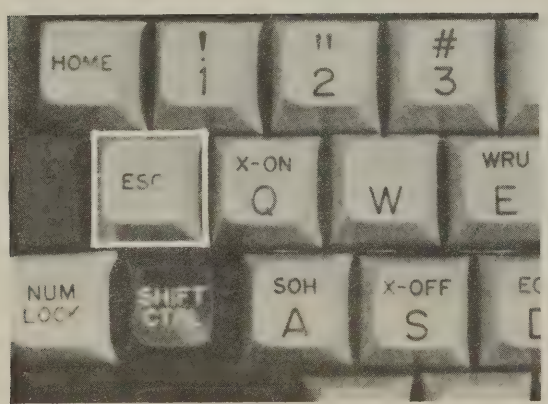
NOTE

The format program will not be retained in memory if either of the following has occurred since the last loading: (1) POWER has been switched OFF, (2) the terminal has been switched ON LINE and the format program uses extended memory (ask your supervisor), or (3) an erroneous format program is resident in memory.

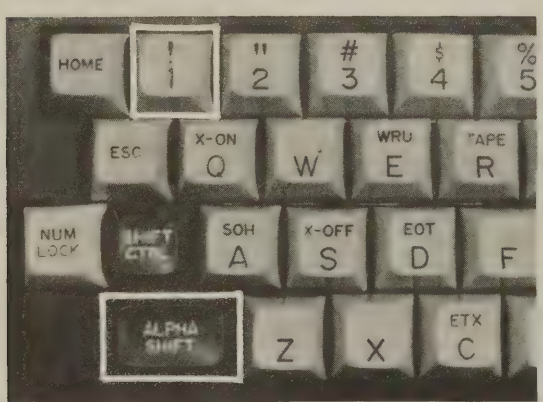
Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to RECORD.
6. Set TAPE FORMAT to LINE.
7. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.
8. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
9. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation



10. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.
11. Press the ESC key.

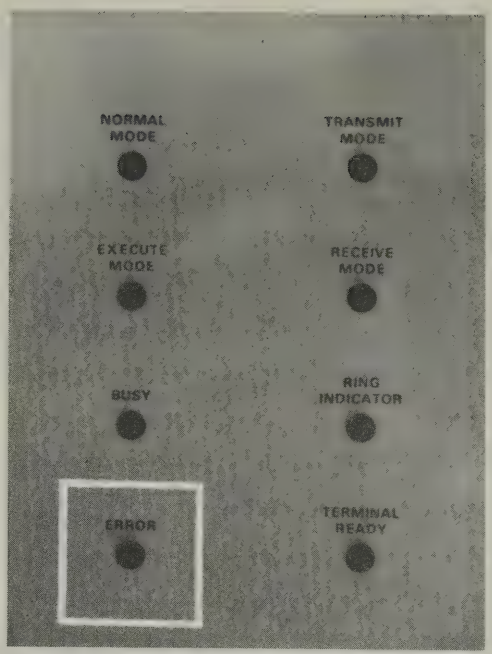


12. Press the ! key; the Model 742 will enter the EXECUTE MODE and print out the first prompt.
13. Begin typing data as described in *Entering Data*, page 35.

ENTERING DATA

NOTE

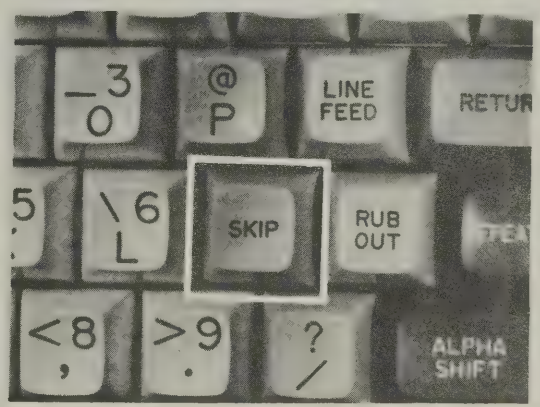
If the terminal beeps, an error has been made. Don't be alarmed — this is the terminal's signal that you've made an error. You'll also see the ERROR indicator on the status display panel illuminate. Further entries from the keyboard will cause the beep to sound again. If this occurs, consult the section on *Correcting Errors*, pages 36 through 41.



1. Press the SKIP key after you type the response to a prompt to terminate an entry from the keyboard and print out the next prompt.

NOTE

Ask your supervisor if the particular format program(s) you will be using enables *auto skip*. If it does, pressing the SKIP key is not necessary if the format program specifies the following for a specified field:
(1) a maximum number of characters and you enter the maximum number
(2) a specific number of characters and you enter that specific number.
In either case, after you type the last character, the Model 742 will automatically print out the next prompt.



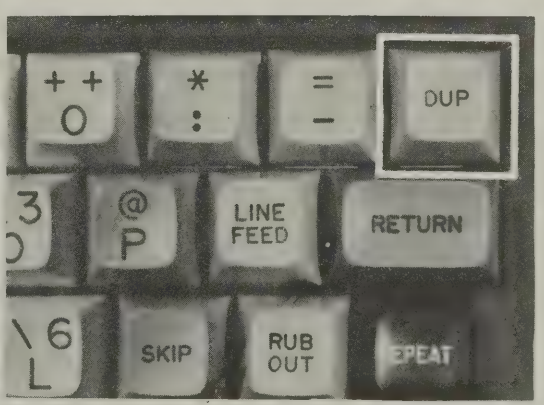
2. Press the DUP key to duplicate in the present field (present block) the corresponding field in the *previous* block.

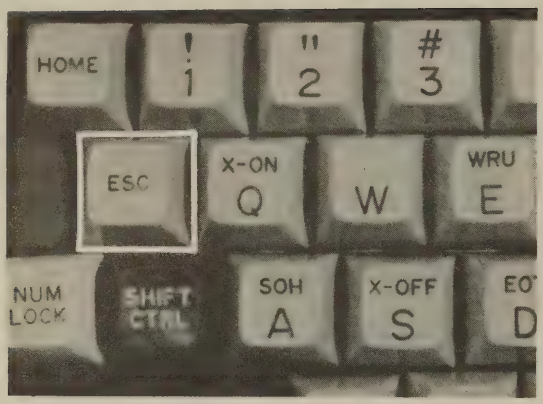
—OR—

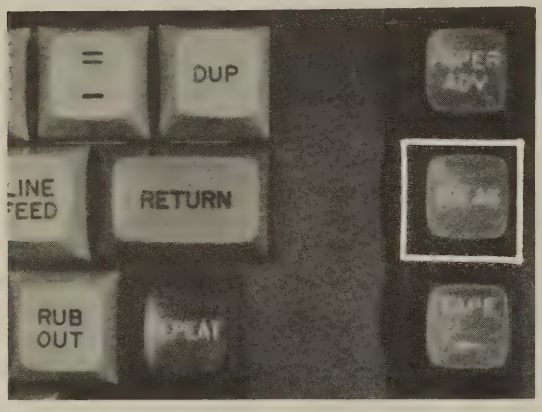
3. Press the DUP key after the HOME key has been pressed to duplicate in the *present* block fields previously entered.

NOTE

Not all format programs permit this feature. Ask your supervisor whether or not your format program(s) incorporates this feature.







4. Press the ESC key to print out (but not record) the contents of the entry buffer.

HINT

This is a convenient method to make one last check on the data before recording. If you need to change any data, you can still use the HOME and RUBOUT keys as described on pages 36 through 38. After recording you must use either the method described on page 38 or the methods described on pages 50 through 60 to correct any errors.

5. Press the BREAK key to terminate execution of a format program and return the terminal to the NORMAL MODE.

CORRECTING ERRORS WITHIN THE PRESENT FIELD

After an entry is typed in response to a prompt, it is entered into the entry buffer where the format program can confirm its accuracy. The entry buffer can confirm the following:

Exact length of field:	A field must be an exact number of characters in length.
Variable length of field:	A field must be at least some number of characters in length but not more than a maximum number.
Specific allowable characters:	A field must contain a specific character(s); for example, either 1, 2, or 3.
Numeric range:	A field must contain a number between a minimum or maximum number; for example, between 1 and 10.
Double-key entry:	A critical field must be typed twice identically.
Type of field:	A field must contain one of the types of characters listed in Table 2-1.

Any one or more of the above checks may be made on a specific entry from the keyboard. If an error is made, the beeper will sound and the ERROR indicator on the status display panel will illuminate. Any further entries from the keyboard will cause the beeper to sound again. If this occurs, perform the following steps:

1. Press the RUBOUT key; the prompt for the present field will be printed out.

2. Type in the correct data.

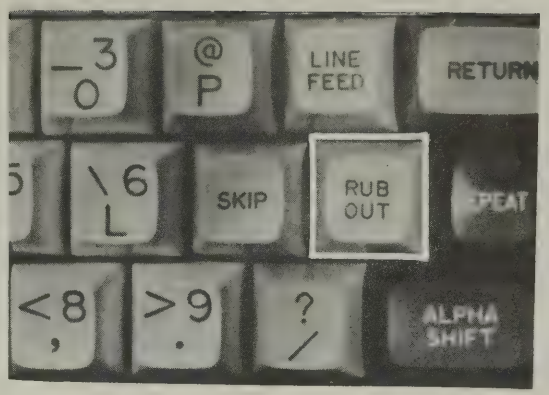
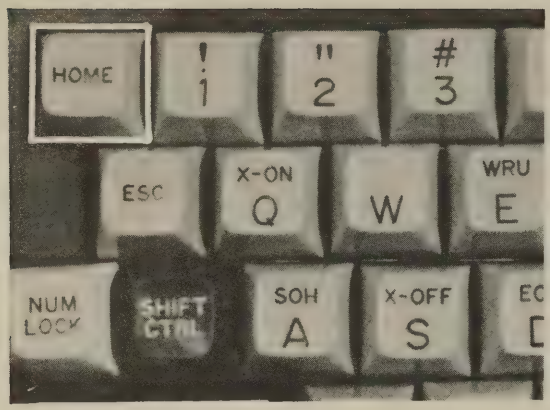


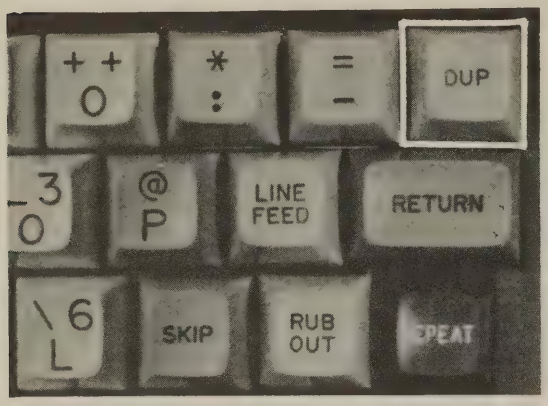
Table 2-1. Types of Characters

Alphabetic	A through Z
Numeric	0 through 9
Alphanumeric	Alphabetic and numeric combinations
Extended alphabetic	Alphabet and comma, space, and period
Extended numeric	Numeric and a single optional + or - as first character and a single optional period
Extended alphanumeric	Alphabetic and numeric and comma, space, and period
Printable	All printable characters plus carriage return, line feed, backspace, and bell
Control	ASCII control characters except X-ON, CAN, SUB, DEL, and ESC
Anything	All keyboard characters except X-ON, CAN, SUB, DEL, and ESC

CORRECTING ERRORS IN A PREVIOUS FIELD WITHIN THE PRESENT BLOCK

The format program cannot detect all errors in an entry. For example, it cannot check for misspelled words. If you type RICHART instead of RICHARD for a field requiring 1 to 20 alphabet characters, the terminal will not beep because the requirements were met. If you make a spelling or similar error before a block is recorded, perform the following steps:





1. Press the HOME key; either the first prompt in the present block or an abort prompt will be printed. If the former is printed, skip to step 3. If the latter is printed, and you wish to correct an error within the present block, proceed to step 2. If the latter is printed and you wish to correct an error in a previous block, see below.

2. Type in N in response to the abort prompt; the first prompt in the present block will print out.

3. Press the DUP key as many times as necessary until the prompt for the incorrect entry is printed.

4. Type in the correct data.

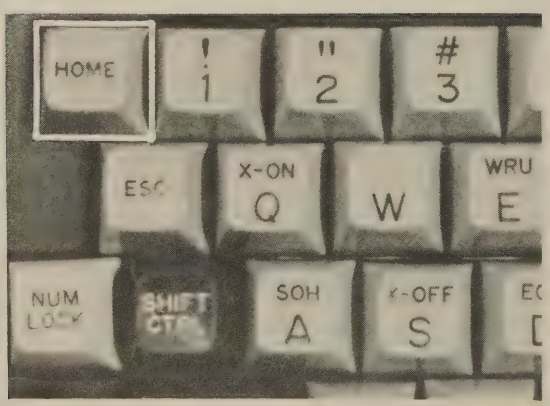
5. Press the DUP key as many times as necessary to return to the last prompt printed out before the HOME key was pressed.

CAUTION

Some fields cannot be duplicated; ask your supervisor which ones can.

CORRECTING ERRORS IN PREVIOUS BLOCKS

Once a block is recorded on tape, there is no way to correct the data in that block while the Model 742 is in the EXECUTE MODE. However, there are methods to indicate to the receiving equipment (when data is later transmitted) that one or more blocks are incorrect. The following method indicates that all the data entered for one source document should be ignored because of an incorrect block(s):



1. Press the HOME key; an abort prompt, e.g., ABORT?, will be printed out.

2. Type in Y; a string of characters will be recorded which will signal the central computer to ignore all data entered for the previous source document.

3. The Model 742 will then print the first prompt for a new source document under the present format program, permitting you to start over.

ERROR MESSAGES

In addition to beeping when you type in data incorrectly, the Model 742 prints out messages when certain procedure errors occur. When one of the characters below is printed out, perform the indicated recovery procedure.

Loading Error (N *is printed out*)

You have attempted either: (a) to improperly load a format program into memory from the format tape cassette, or (b) to begin execution of a format program no longer resident in memory.

The format tape cassette was not correctly set up:

1. Check that the upper unit PLAYBACK switch is set to LOCAL.
2. Check that CASSETTE 1 is set to PLAYBACK.
3. Reinstall the format tape cassette into the CASSETTE 1 transport, checking that the READY indicator illuminates.
4. Perform a search (page 23), using the name of the format program as the search ID.
5. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.
6. Press the ESC key.
7. Press the # key.
8. Begin typing data.

The format program is no longer resident in memory:

1. Check that the upper unit PLAYBACK switch is set to LOCAL.
2. Check that CASSETTE 1 is set to PLAYBACK.
3. Install the format tape cassette into the CASSETTE 1 transport, checking that the READY indicator illuminates.
4. Perform a search using the name of the format program as the search ID.
5. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

6. Press the ESC key.

7. Press the # key.

8. Begin typing data.

Record Error (R *is printed out*)

You have failed to properly set up the record cassette and the format program has attempted to record a block of data:

1. Check that the upper unit RECORD switch is set to LOCAL.

2. Check that CASSETTE 2 is set to RECORD.

3. Reinstall the blank tape cassette into the CASSETTE 2 transport, checking that the READY indicator illuminates.

4. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

5. Press the ESC key.

6. Press the ! key.

7. Begin typing data.

Playback Error (P *is printed out*)

You have failed to properly set up the playback cassette for either a search or loading a format program into memory:

1. Check that the upper unit PLAYBACK switch is set to LOCAL.

2. Check that CASSETTE 1 is set to PLAYBACK.

3. Install the format tape cassette into the CASSETTE 1 transport, checking that the READY indicator illuminates.

4. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

5. Press the ESC key.

6. Press the $ key to begin a search.

–OR–

7. Press the # key to begin loading a format program into memory.

Terminal On Line Error (T *is printed out*)

You have attempted to switch the terminal ON LINE while either loading an extended memory format program into memory from CASSETTE 1 or executing an extended memory format program resident in memory.

1. Set the terminal ON LINE switch to OFF.
2. Perform the steps required to load a format program into memory from tape (steps 1 through 16, pages 32 and 33).
3. Complete all data entry required before transmission.
4. Perform the steps required to transmit data (steps 1 through 11 in the following paragraph).★

TRANSMITTING DATA

Terminal Setup

1. Set KEYBOARD to OFF.
2. Set PLAYBACK to LINE.
3. Set RECORD to OFF.
4. Set PRINTER to LINE to print out data being transmitted. If the terminal SPEED switch (master control panel) has been preset to HI, this step may not be possible. Ask your supervisor.

—OR—

5. Set PRINTER to OFF to prohibit printout of data.
6. Set CASSETTE 1 to PLAYBACK.
7. Insert the tape cassette from which data is to be transmitted into the CASSETTE 1 transport. Be sure the desired side (Side A or Side B) faces you.
8. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
9. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.
10. Set the terminal ON LINE switch to ON LINE.

★SUPPLEMENT, Exercise 8, page 17

Operation

11. Complete on-line communication as described on pages 47, 48 and 49.

RECEIVING DATA

Terminal Setup

1. Set KEYBOARD to OFF.
2. Set PLAYBACK to OFF.
3. Set RECORD to LINE.
4. Set PRINTER to LINE to print out data being received. If the terminal SPEED switch (master control panel) has been preset to HI, this step may not be possible. Ask your supervisor.

—OR—

5. Set PRINTER to OFF to prohibit printout of data received.
6. Set CASSETTE 2 to RECORD.
7. Set TAPE FORMAT to CONT for maximum tape storage capacity.

—OR—

8. Set TAPE FORMAT to LINE for less storage capacity, but easier editing.
9. Insert the tape cassette on which data is to be recorded into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.
10. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
11. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.
12. Set the terminal ON LINE switch to ON LINE.

Operation

13. Complete on-line communications as described on pages 47, 48 and 49.

TRANSMITTING DATA WHILE SIMULTANEOUSLY RECEIVING DATA

The capability to transmit and receive data simultaneously is possible only when the Low Speed Communication program is resident in memory. Ask your supervisor to set the controls on the lower unit internal control panel for FULL DUPLEX, low speed communication. Then perform the following steps.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LINE.
4. Set PRINTER to LINE to print out data being received.

—OR—

5. Set PRINTER to OFF to prohibit printout of data.
6. Set CASSETTE 1 to PLAYBACK.
7. Set TAPE FORMAT to CONT for maximum tape storage capacity of received data.

—OR—

8. Set TAPE FORMAT to LINE for less storage capacity of received data but easier editing.
9. Insert the demonstration tape cassette (TI Part No. 984615-0001) into the CASSETTE 1 transport with Side A facing you.
10. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
11. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.
12. Set the terminal ON LINE switch to OFF.

Operation

13. If the EXECUTE MODE indicator (on the status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

14. Press the ESC key.

15. Press the $ key; the terminal will respond with a line feed and a carriage return.

16. Type in LSPCOM as the search ID.

17. Press the SKIP key and wait for the terminal to respond with a line feed and a carriage return.

18. Press the ESC key.

19. Press the # key; the Model 742 will load the Low Speed Communication program into memory from CASSETTE 1, then enter the EXECUTE MODE and print out the first prompt.

20. Perform the actions requested by the prompts.

TRANSMITTING DATA AND ENTERING DATA UNDER FORMAT PROGRAM CONTROL (TAPE CASSETTE)

NOTE

This operation is not possible if the format program uses extended memory or if the memory expansion feature is present in your Model 742. (Ask your supervisor.)

Perform the following steps if you wish to transmit data previously recorded while at the same time you enter new data under format program control *when the format program is not in memory from a previous loading.*

Terminal Setup

1. Set KEYBOARD to LOCAL.

2. Set PLAYBACK to LOCAL.

3. Set RECORD to LOCAL.

4. Set PRINTER to LOCAL.

5. Set CASSETTE 1 to PLAYBACK.

6. Set TAPE FORMAT to LINE.

7. Insert the format tape cassette into the CASSETTE 1 transport. Be sure the cassette side (Side A or Side B) containing the desired format program faces you.

8. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.

9. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

10. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.

11. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

12. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

13. Set the terminal ON LINE switch to ON LINE.

Operation

14. If the desired program is not at the beginning of the format tape, perform a search (steps 9 through 14, page 23) using the name of the desired program as the search ID.

15. Press the BREAK key if the EXECUTE MODE indicator (status display panel) is illuminated; the terminal will return to the NORMAL MODE.

16. Press the ESC key.

17. Press the # key; the first prompt will be printed out.

18. Remove the format tape cassette from the CASSETTE 1 transport (be sure the adjacent END indicator is illuminated before removing).

19. Install the tape cassette from which data is to be transmitted into the CASSETTE 1 transport.

20. Set PLAYBACK to LINE.

21. Complete on line communications as described on pages 47, 48 and 49.

22. Begin typing data in response to the prompts.

Previously recorded data will be transmitted while you enter data from the keyboard under format program control.

TRANSMITTING DATA AND ENTERING DATA UNDER FORMAT PROGRAM CONTROL (MEMORY)

NOTE

This operation is not possible if the format program uses extended memory or when using a TICOL II program. (Ask your supervisor.)

Perform the following steps when you wish to transmit previously recorded data while at the same time you enter new data under format program control *when the format program is already in memory from a previous loading*.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LINE.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 1 to PLAYBACK.
6. Set TAPE FORMAT to LINE.
7. Insert the tape cassette from which data is to be transmitted into the CASSETTE 1 transport. Be sure the desired side (Side A or Side B) faces you.
8. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
9. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

10. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.

11. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

12. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

13. Set the terminal ON LINE switch to ON LINE.

Operation

14. Complete on line communications as described on pages 47, 48 and 49.

15. Press the BREAK key.

16. Press the ESC key.

17. Press the ! key; the first prompt will be printed out.

18. Begin typing data in response to the prompts.

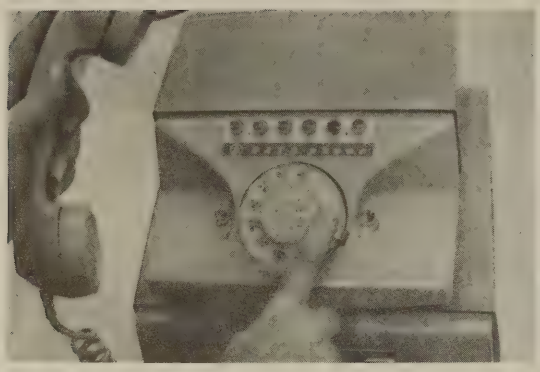
Previously recorded data will be transmitted while you enter data from the keyboard under format program control.

COMPLETING ON-LINE COMMUNICATION

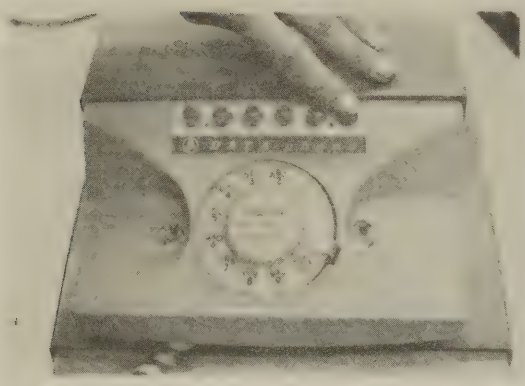
Ask your supervisor if your Model 742 will *originate* or *answer* the data call. If the terminal will answer the call, no further steps need be taken. If the terminal will originate the call, ask your supervisor if you will be using a data set or DAA, then perform the steps in the appropriate category below:

Data Set

1. Press the TALK button on the data set.



2. Pick up the telephone handset and dial the appropriate number; a data tone can be heard after the call is answered.



3. Press the DATA button on the data set when the data tone begins if you are operating at low speed (ask your supervisor).

—OR—

4. Press the DATA button when the data tone ends if you are operating at high speed (ask your supervisor).

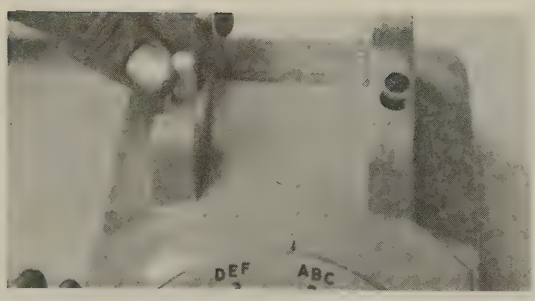
HINT

If the terminal SPEED switch (master control panel) is set to HI, you are operating at high speed; if set to LO, you are operating at low speed.

5. Hang up the handset.

6. Communication will begin automatically.

Data Access Arrangement (DAA)



1. Pick up the telephone handset.

2. Lift up the DATA key (white) on the telephone cradle.

3. Dial the appropriate number; a data tone can be heard after the call is answered.

4. Hang up the handset when the data tone begins if you are operating at low speed (ask your supervisor).

—OR—

5. Hang up the handset when the data tone ends if you are operating at high speed (ask your supervisor).

HINT

If the terminal SPEED switch (master control panel) is set to HI, you are operating at high speed; if set to LO, you are operating at low speed.

6. Communication will begin automatically.

SECTION III
ADVANCED OPERATING INSTRUCTIONS

In this section you will be operating the Model 742 in the NORMAL MODE again. The operations discussed in this section permit you to correct those errors in data already recorded on tape that were not detected while operating under format program control.

However, before you attempt to change any of the data recorded on tape you must be absolutely sure you know exactly what has been recorded on tape. As you recall from Section II, the format program may add, delete, or substitute characters while data is in the entry buffer. Therefore, the data recorded on tape may look quite different from the data you entered from the keyboard under format program control. In fact, some of the characters added may be nonprintable characters. This means that if you play back the cassette, some characters may not be printed. You must be aware of these characters.

REPLACING BLOCKS OF DATA ON A TAPE CASSETTE (NORMAL MODE)

NOTE

This method may be used only to replace an entire data block on tape using the original tape.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to PLAYBACK.

6. Set TAPE FORMAT to LINE.

–OR–

7. Set TAPE FORMAT to CONT.

NOTE

Use the same tape format in which the tape was originally recorded.

8. Insert the tape cassette to be edited into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.

9. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

10. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation

11. If the EXECUTE MODE indicator (status display panel) is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

12. Press the ESC key.

13. Press the $ key; the terminal will respond with a line feed and a carriage return.

14. Type in a unique string of 1 to 16 characters (search ID) that is in the block *before* the block to be replaced.

NOTE

Do not include the last character in a block as part of the search ID.

15. Press the SKIP key to begin the search.

NOTE

If a playback error occurs (the upper unit ERROR indicator will illuminate), follow the suggested recovery procedures outlined on page 22.

16. When the search ID is located on tape, the terminal responds with a line feed and a carriage return.

17. Press the BLOCK FWD switch to play back the remainder of the block which contains the search ID. If you are sure the following block is the desired block, e.g., the block to be replaced, skip to step 20. If you are not sure, proceed to step 18.

18. Press BLOCK FWD to print out the block to be replaced; if the desired block is not printed out, use the BLOCK FWD and/or BLOCK REV as required until the block is printed out.

19. Press the BLOCK REV switch twice and the BLOCK FWD once to return to the beginning of the block to be replaced.

20. Set CASSETTE 2 to RECORD.

21. Press the RECORD CONTROL/ON switch; the adjacent indicator will illuminate.

22. Type in the new block; the data will be entered into the record buffer character by character. Watch the CHARACTER display lights change configurations each time you type a new character.

23. Press the LINE FEED and RETURN keys to record the block of data on CASSETTE 2 if TAPE FORMAT is set to LINE. (The RETURN key initiates recording.)

–OR–

24. Press the RECORD CONTROL/OFF switch to record the block of data on CASSETTE 2 if TAPE FORMAT is set to CONT. If the record buffer is not completely filled when the RECORD CONTROL/OFF switch is pressed the remainder of the block is automatically filled with nulls when recorded on tape.

NOTE

In either case, recording of data is automatically initiated when the 86th character is typed into the record buffer.

To replace the *next* block:

25. Press the RECORD CONTROL/ON switch only if the switch was used to record the last block replaced.

26. Repeat steps 22 through 24.

To replace a *later* block:

27. Press the RECORD CONTROL/OFF switch.

28. Set CASSETTE 2 to PLAYBACK.

29. Repeat steps 11 through 24. ★

★SUPPLEMENT, Exercise 9A, page 30

ADDING BLOCKS OF DATA ON TAPE CASSETTES (NORMAL MODE)

NOTE

This method requires use of a blank tape cassette in addition to the tape cassette to be corrected.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to PLAYBACK.
6. Set TAPE FORMAT to CONT.

–OR–

7. Set TAPE FORMAT to LINE.

NOTE

Use the same format in which the tape was originally recorded.

8. Insert the tape cassette to be edited into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.
9. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
10. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.
11. Insert a blank tape cassette into the CASSETTE 1 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.
12. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
13. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

14. If the EXECUTE MODE indicator is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

15. Press the ESC key.

16. Press the $ key; the terminal will respond with a line feed and a carriage return.

17. Type in a unique string of 1 to 16 characters (search ID) that is in the block *before* the block is to be added.

NOTE

Do not include the last character in a block as part of the search ID.

18. Press the RECORD CONTROL/ON switch; the adjacent indicator will illuminate.

19. Press the CONT START switch; CASSETTE 2 will be duplicated on CASSETTE 1 while the search is in progress.

CAUTION

Do not use the SKIP key to initiate the search since the SKIP key generates an ASCII code which will be recorded, in addition to starting the playback cassette.

NOTE

If a playback error occurs (upper unit ERROR indicator will illuminate), follow the suggested recovery procedures as outlined on page 22.

20. When the search ID is located on tape, the terminal will respond with a line feed and a carriage return.

21. Press the BLOCK FWD switch to record the remainder of the block on CASSETTE 1.

22. Type in the additional block. Watch the CHARACTER display lights change configurations.

23. Press the LINE FEED and RETURN keys to record the block of data on CASSETTE 1 if TAPE FORMAT is set to LINE. (The RETURN key initiates recording.)

–OR–

24. Press RECORD CONTROL/OFF switch to record the block of data on CASSETTE 1 if TAPE FORMAT is set to CONT. If the record buffer is not completely filled when the RECORD CONTROL/OFF switch is pressed, the remainder of the block is automatically filled with nulls when recorded on tape.

NOTE

In either case, recording of data is automatically initiated when the 86th character is entered into the record buffer.

To add another block *now*:

25. Press RECORD CONTROL/ON switch only if the switch was used to record the last block added.

26. Repeat steps 22 through 24.

To add a block *later*:

27. Press the RECORD CONTROL/OFF switch.

28. Repeat steps 14 through 24.

To resume tape duplication:

29. Set PRINTER to OFF.

30. Press the RECORD CONTROL/ON switch only if the switch was used to record the last block added.

31. Press the CONT START switch; duplication will resume.

32. Press the (CONT) STOP switch to terminate duplication. ★

DELETING BLOCKS OF DATA ON TAPE CASSETTES (NORMAL MODE)

NOTE

This method requires a blank tape cassette in addition to the tape cassette to be changed.

Terminal Setup

1. Set KEYBOARD to LOCAL.

2. Set PLAYBACK to LOCAL.

★SUPPLEMENT, Exercise 9B, page 33

3. Set RECORD to LOCAL.

4. Set PRINTER to LOCAL.

5. Set CASSETTE 1 to PLAYBACK.

6. Set TAPE FORMAT to CONT.

–OR–

7. Set TAPE FORMAT to LINE.

NOTE

Use the same format in which the tape was originally recorded.

8. Insert the tape cassette to be changed into the CASSETTE 1 transport. Be sure the desired side (Side A or Side B) faces you.

9. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.

10. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

11. Insert a blank tape cassette into the CASSETTE 2 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.

12. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.

13. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation

14. If the EXECUTE MODE indicator is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

15. Press the ESC key.

16. Press the $ key; the terminal will respond with a line feed and a carriage return.

17. Type in a unique string of 1 to 16 characters (search ID) that is in the block *before* the block to be deleted.

NOTE

Do not include the last character in a block as part of the search ID.

18. Press RECORD CONTROL/ON switch; the adjacent indicator will illuminate.

19. Press the CONT START switch; CASSETTE 1 will be duplicated on CASSETTE 2 while the search is in progress.

CAUTION

Do not use the SKIP key to initiate the search since the SKIP key generates an ASCII code which will be recorded, in addition to starting the playback cassette.

NOTE

If a playback error occurs (the upper unit ERROR indicator will illuminate), follow the suggested recovery procedures as outlined on page 22.

20. When the search ID is located on tape, the terminal will respond with a line feed and a carriage return.

21. Press the BLOCK FWD switch to record the remainder of the block on CASSETTE 2.

22. Press the RECORD CONTROL/OFF switch.

23. Press BLOCK FWD to print, but not record, the block to be deleted.

To delete the *next* block:

24. Repeat step 23.

To delete a *later* block:

25. Repeat steps 14 through 23.

To resume tape duplication:

26. Set PRINTER to OFF.

27. Press the RECORD CONTROL/ON switch.

28. Press the CONT START switch; duplication will resume.

29. Press the (CONT) STOP switch to terminate duplication. ★

★SUPPLEMENT, Exercise 9C, page 33

CHANGING SINGLE CHARACTERS ON TAPE CASSETTES (NORMAL MODE)

NOTE

This method requires a blank tape cassette in addition to the tape cassette to be corrected.

Terminal Setup

1. Set KEYBOARD to LOCAL.
2. Set PLAYBACK to LOCAL.
3. Set RECORD to LOCAL.
4. Set PRINTER to LOCAL.
5. Set CASSETTE 2 to PLAYBACK.
6. Set TAPE FORMAT to CONT.

–OR–

7. Set TAPE FORMAT to LINE.

NOTE

Use the same format in which the tape was originally recorded.

8. Insert the tape cassette to be edited into the CASSETTE 2 transport. Be sure the desired side (Side A or Side B) faces you.
9. Press the CASSETTE 2/REWIND switch and wait for the adjacent END indicator to illuminate.
10. Press the CASSETTE 2/LOAD switch and wait for the adjacent READY indicator to illuminate.
11. Insert a blank tape cassette into the CASSETTE 1 transport. Be sure the cassette side (Side A or Side B) on which you want to record faces you.
12. Press the CASSETTE 1/REWIND switch and wait for the adjacent END indicator to illuminate.
13. Press the CASSETTE 1/LOAD switch and wait for the adjacent READY indicator to illuminate.

Operation

14. If the EXECUTE MODE indicator is illuminated, press the BREAK key. The terminal will return to the NORMAL MODE.

15. Press the ESC key.

16. Press the $ key; the terminal will respond with a line feed and a carriage return.

17. Type in a unique string of 1 to 16 characters (search ID) including the character(s) to be changed.

NOTE

Do not include the last character in a block as part of the search ID.

18. Press the RECORD CONTROL/ON switch.

19. Press the CONT START switch; CASSETTE 2 will be duplicated on CASSETTE 1 while the search is in progress.

CAUTION

Do not use the SKIP key to initiate the search since the SKIP key generates an ASCII code which will be recorded in addition to starting the playback cassette.

NOTE

If a playback error occurs (the upper unit ERROR indicator will illuminate), follow the procedures as outlined on page 22.

20. When the search ID is located on tape, the terminal will respond with a line feed and a carriage return.

21. Press the RECORD CONTROL/PRINT switch to print the contents of the record buffer. The characters in the search ID will be the last characters printed.

22. Press the CHAR FWD switch to print out any additional character(s) to be changed after the search ID. Each time you press the CHAR FWD switch a new character will be read into the record buffer from the playback buffer.

CAUTION

Carefully observe the following precautions:

(1) Do not read the 86th character or carriage return character into the record buffer by pressing the CHAR FWD switch, and

(2) Do not press RECORD CONTROL/OFF switch while data is in the record buffer.
If you do, the block (or partial block) will be recorded.

23. Press the TAPE key to move the printhead over the (first) incorrect character.

24. Strike over the incorrect character(s) from the keyboard; the corresponding character(s) will be changed in the record buffer.

To change a character in the *next* block:

25. Repeat steps 22 through 24. After one block is recorded, pressing the CHAR FWD switch causes the next block to be read into the playback buffer, and the first character in that block is read from the playback buffer into the record buffer.

To change a character(s) in a *later* block:

26. Press the RECORD CONTROL/OFF switch.

27. Repeat steps 14 through 24.

To resume tape duplication:

28. Set PRINTER to OFF.

29. Press the RECORD CONTROL/ON switch.

30. Press the CONT START switch; tape duplication will resume.

31. Press the (CONT) STOP switch to terminate tape duplication.★

★SUPPLEMENT, Exercise 9D, page 36

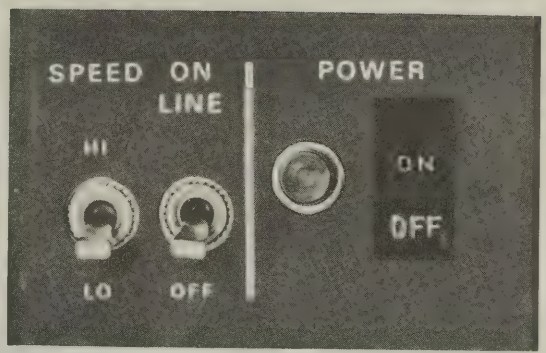
SECTION IV
CONTROLS AND KEYBOARD

CONTROLS AND INDICATORS

The Model 742 Programmable Data Terminal has five primary control/indicator areas: (1) master control panel, (2) lower unit internal control panel, (3) upper unit control panel, (4) keyboard, and (5) status display panel.

Master Control Panel

The following controls and indicator are located to the right of the keyboard:



a. POWER switch. In the OFF position, the power line is disconnected from all circuits in the data terminal except the primary ac line fuse. In the ON position, power is supplied to all circuits in the terminal.

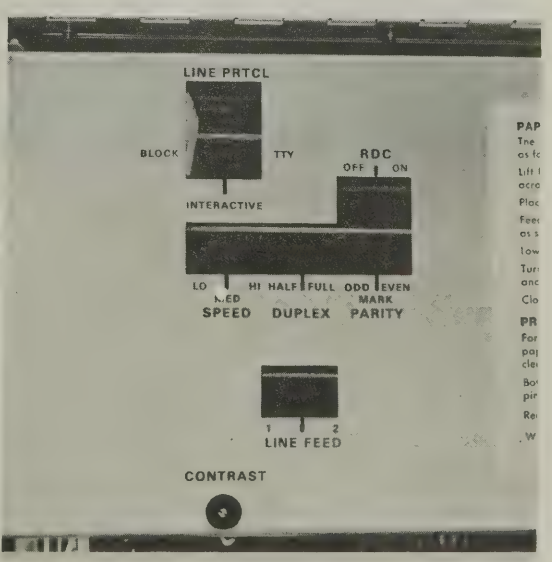
b. ON LINE/OFF switch. When set to the ON LINE position, the entire terminal is connected to the communication line. The terminal *transmits* data to the line from the keyboard or from the playback cassette and *receives* data on the printer or record cassette. When set to the OFF position, the terminal is disconnected from the line.

c. SPEED switch. When set to the HI position the terminal transmits and receives at 1200 baud (120 characters-per-second); when set to the LO position, the terminal transmits and receives at 110, 150, or 300 baud (10, 15, or 30 characters-per-second, respectively). This switch should be preset by your supervisor.

d. ON indicator. This lamp illuminates when the POWER switch is ON.

Lower Unit Internal Control Panel

The following controls are located under the terminal cover atop the PC card rack cover. Except for the LINE FEED switch, these controls should be preset by your supervisor. However, general familiarization may be useful in discovering terminal malfunctions caused by incorrectly set controls.



a. LINE FEED switch. Set to 1 for single line spacing; set to 2 for double line spacing.

b. SPEED switch. Set to LO, MED, or HI to transmit and receive at 110, 150, or 300 baud, respectively (10, 15, or 30 characters-per-second). The speed selected must correspond to the input data line rate. If the SPEED switch on the master control panel is set to the HI position, this switch is inoperative.

c. PARITY switch. Sets the transmission parity to EVEN, ODD, or MARK.

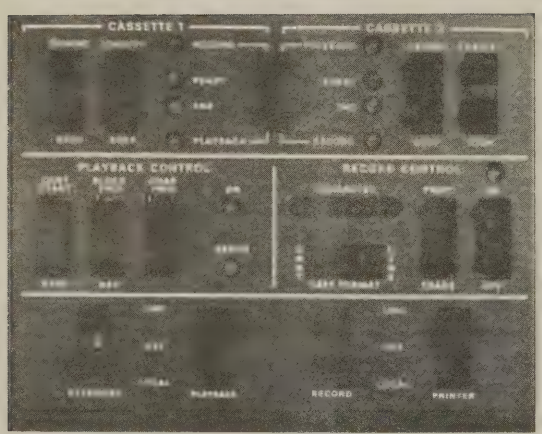
d. ADC switch. When set to the ON position, Remote Device Control is activated, enabling use of the SKIP key in the NORMAL MODE.

e. DUPLEX switch. Set to FULL to prohibit local printout of transmitted data; set to HALF to enable local printout of transmitted data. When the Low Speed Communication Program is loaded into memory, set to FULL for full duplex operation.

f. CONTRAST control. This control darkens or lightens the printed character. To increase print contrast (darken the image), rotate the CONTRAST control clockwise with a small screwdriver; to decrease, rotate counterclockwise.

g. LINE PRTCL switch. This switch sets the line protocol to BLOCK, INTERACTIVE, or TTY.

Upper Unit Control Panel



The switches on the upper unit control panel control the major devices of the Model 742: keyboard, printer, playback (transport), and record (transport). Depending on how the switches are set, these four devices may interact with one another in various ways. For example, when you type a character on the keyboard, it may be: (1) printed out on the printer, (2) recorded on the record cassette, and (3) transmitted to the communication line. Likewise, when a character is received from the line, it may be: (1) printed out on the printer and (2) recorded on the record cassette. When a character is played back from the playback cassette, it may be: (1) printed out on the printer, (2) recorded on the record cassette, and (3) transmitted to the line. When the terminal is in the NORMAL MODE *you* control the interaction of the major devices; when the terminal is in the EXECUTE MODE, a *format program* controls the interaction of the devices.

The Model 742 has three internal storage areas (buffers): (1) entry buffer, (2) playback buffer, and (3) record buffer. All three buffers have an 86 character capacity (comparable to one block of data on tape and one or more printed lines).

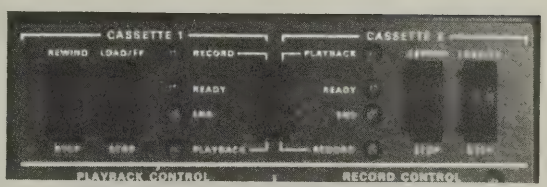
Before any data (from the keyboard, line, playback buffer or entry buffer) is recorded on the record cassette, it is first entered into the record buffer. When the terminal is in the NORMAL MODE, all data entered from the keyboard is first entered into the record buffer before being recorded on the record cassette. While the data is in the record buffer you may correct any errors you discover.

When the terminal is in the EXECUTE MODE, all data entered from the keyboard is first entered into the entry buffer before it is transferred to the record buffer. While the data is in the entry buffer, *you* may correct any errors the format program detects or you discover yourself. However, after the block of data is moved to the record buffer, you have no control over the data.

After data is played back from the playback cassette, it is first entered into the playback buffer before it is printed, transmitted to the line, or transferred to the record buffer. When a cassette is played back, *continuously*, blocks of data are moved, one after another, through the playback buffer, then to the printer, line, or record buffer. When a cassette is played back a *block* at a time, only one block is moved to the playback buffer, then to the printer, line, or record buffer. When a cassette is played a *character* at a time, first a block is moved to the playback buffer, then only one character at a time is transmitted to printer, line, or record buffer.

The upper unit control panel is divided into three rows, each corresponding to a major function:

- Top row — tape cassette control
- Middle row — playback and record control
- Bottom row — device control.



Top Row, Tape Cassette Control. The top row is divided into two parts by the PLAYBACK/RECORD switch. The switches on the left control CASSETTE 1 (left cassette) and the identical switches on the right control CASSETTE 2 (right cassette).

a. REWIND/STOP switch. Pressing REWIND rewinds the tape towards the beginning-of-tape (BOT) and continues until clear leader is sensed or STOP is pressed. This switch is inoperative when the middle row RECORD CONTROL or PLAYBACK CONTROL for record or playback cassette, respectively, is ON.

b. LOAD/FF/STOP switch. After the tape is rewound, pressing LOAD/FF moves the tape forward to the BOT marker (past clear leader), then stops. Pressing LOAD/FF again moves the tape forward at a high speed (Fast Forward) toward the end-of-tape (EOT) until clear leader is sensed or STOP is pressed.

c. PLAYBACK/RECORD switch. This switch selects which cassette is in playback or record mode; cassettes automatically switch to opposite modes. Pressing the top part of the switch sets CASSETTE 1 to RECORD and CASSETTE 2 to PLAYBACK. Pressing the lower part of the switch sets CASSETTE 1 to PLAYBACK and CASSETTE 2 to RECORD.

d. PLAYBACK/RECORD indicator. This lamp indicates which cassette is in playback or record mode. When the RECORD indicator on the left is illuminated, CASSETTE 1 is in the RECORD mode and the PLAYBACK indicator on the right is

illuminated, indicating CASSETTE 2 is in the PLAYBACK mode. When the PLAYBACK indicator on the left is illuminated, CASSETTE 1 is in the PLAYBACK mode and the RECORD indicator on the right is illuminated, indicating CASSETTE 2 is in the RECORD mode.

e. END indicator. This lamp illuminates when clear leader is sensed at either end of the tape.

f. READY indicator. This lamp illuminates when the tape is rewound and ready for record or playback. The BOT and EOT markers (holes) enclose the length of magnetic tape on which data can be recorded. Data cannot be recorded on the clear leader which explains why you must "load" and "ready" a tape before recording or playing back data.

Middle Row, Playback and Record Controls. The middle row is divided into two parts. The switches on the left control the playback cassette (CASSETTE 1 or CASSETTE 2) and the switches on the right control the record cassette (CASSETTE 1 or CASSETTE 2).

PLAYBACK CONTROL

a. CONT START/STOP switch. Pressing CONT START begins continuous playback of the particular cassette indicated by the illuminated PLAYBACK indicator. The tape will stop when clear leader is sensed or STOP is pressed.

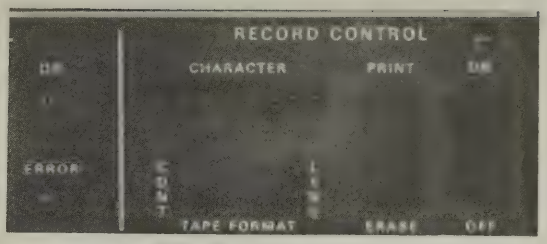
b. BLOCK FWD/REV switch. Pressing BLOCK FWD causes the next block on tape to be played back. If STOP is pressed before a full block is played back, or CHAR FWD was not pressed enough times to play back a complete block, pressing BLOCK FWD causes the remainder of a block to be played back. Pressing REV causes the tape to back up one block and stop and clears the playback buffer.

c. CHAR FWD switch. Pressing CHAR FWD reads a single character out of the playback buffer. If the playback buffer is empty, the next block on tape will be read into the buffer before the first character is read. The character read can be seen on the CHARACTER display if you are duplicating a tape or it can be printed out on the printer.

d. ON indicator. This indicator illuminates when PLAYBACK CONTROL is in use.

e. ERROR indicator. This indicator illuminates when there is a playback error. A playback error can be caused by a dirty tape, defective spot or wrinkle in the tape, or a random error.

RECORD CONTROL



f. CHARACTER display. These lamps indicate the 7-bit ASCII code of the character last received by the record buffer. Bits 1 through 7 read from left to right and bit 8 is used internally by the terminal. Operators familiar with paper tape systems will recognize the character display patterns. Refer to Appendix B for the ASCII code and character set.

g. TAPE FORMAT switch. This two-position switch controls the format in which data is recorded on tape. When the switch is set to the LINE position, data is recorded on tape when the ASCII carriage return character or the 86th character of each block is entered from the keyboard, received from the line, or played back from the opposite cassette. Therefore, each block of data normally corresponds to one line of printout on the printer. This format is especially helpful when preparing and/or editing a tape. When the TAPE FORMAT switch is set to the CONTinuous position, data is recorded on tape when the 86th character of each block is entered from the keyboard, received from the line, or played back from the opposite cassette. This format is especially useful when maximum tape storage is desired. Tapes recorded in one format may be easily converted to the other format through the tape duplicating process.

h. PRINT/ERASE switch. This switch is used to check the contents of the record buffer during editing. The PRINTER and RECORD switches (bottom row) must be set to LOCAL. Pressing PRINT causes the contents of the record buffer to be printed out, but not recorded on tape. Pressing ERASE erases the contents of the record buffer but does not affect data previously recorded on tape.

NOTE

Refer to Section I, page 27, for tape erasure. You will note that erasing an entire tape requires two fingers to guard against accidents!

i. ON/OFF switch. Pressing ON causes data received from the line, played back from the playback cassette (via the playback buffer), or entered from the keyboard to be entered into the record buffer from which it is recorded on the record cassette. Pressing OFF causes the contents of the record buffer (if any) to be recorded on the record cassette. No further recording is possible until ON is pressed again.

j. ON indicator. This lamp illuminates when RECORD CONTROL is in use.

Bottom Row, Device Control. The functions of the four major devices of the Model 742 (i.e., keyboard, printer, playback, and record) are controlled by the bottom row switches as follows:

LINE — Devices are both interconnected and connected to the communication line. (line loop).

LOCAL — Devices are interconnected but not connected to the communication line. (local loop).

OFF — Devices are neither interconnected nor connected to the communication line.

a. KEYBOARD switch. When this switch is set to the LINE position, the keyboard is connected to the receive devices (printer and record) in the LINE mode and to the communication line. When set to the LOCAL position, the keyboard is connected to the receive devices in the LOCAL mode, but not to the communication line. When set to the OFF position, the keyboard is neither connected to the receive devices nor to the communication line. If the KEYBOARD switch is set to the LINE position and the ON LINE/OFF switch on the master control panel is set to the OFF position, the keyboard is automatically set to the local mode.

b. PRINTER switch. When this switch is set to the LINE position, the printer is connected to the other devices (keyboard and playback or record) in the LINE mode and to the communication line. When set to the LOCAL position the printer is connected to the other devices in the LOCAL mode but not to the communication line. When set to the OFF position, the keyboard is neither connected to the other devices nor the communication line. If this switch is set to the LINE position and the ON LINE/OFF switch on the master control panel is set to the OFF position, the printer is automatically set to the local mode.

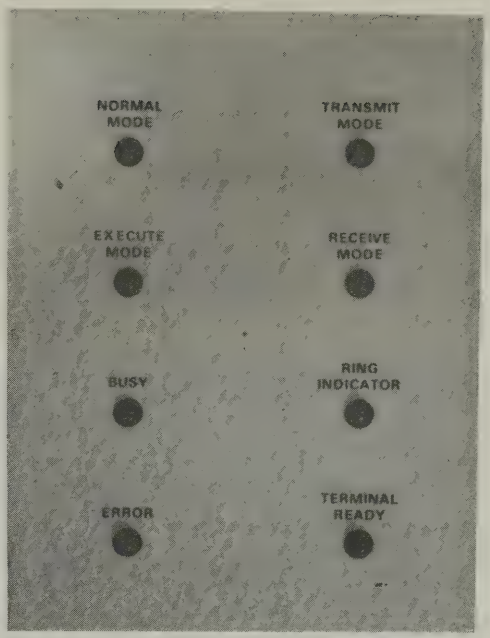
c. PLAYBACK switch. When this switch is set to the LINE position, the playback device (the cassette in the playback mode) is connected to the receive devices (printer and record) in the LINE mode and to the communication line. When set to the LOCAL position the playback device is connected to the receive devices but not to the communication line. When set to the OFF position, the playback device is connected neither to the receive devices nor the communication line. If this switch is set to the LINE position and the ON LINE/OFF switch on the master control panel is set to the OFF position, the playback device is automatically set to the off mode.

d. RECORD switch. When this switch is set to the LINE position, the record device (the cassette in the record mode) is connected to the other devices (printer and keyboard) in the LINE mode and to the communication line. When set to the LOCAL position the record device is connected to the other devices in the LOCAL mode but not to the communication line. When in the OFF position the record device is connected neither to the other devices nor the communication line. If this switch is set to the LINE position and the ON LINE/OFF switch on the master control panel is set to the OFF position, the record device is automatically set to the off mode.

Status Display Panel

The following indicators, located to the right of the keyboard and printer (lower unit) are divided into two functional categories:

- Local indicators (left part)
- Line indicators (right part).



Local Indicators — Line Indicators

Local Indicators

a. NORMAL MODE. This indicator illuminates when the terminal functions can be controlled by *you*.

b. EXECUTE MODE. This indicator illuminates when the terminal functions are controlled by the *format program* resident in memory.

c. BUSY. This indicator illuminates when the terminal is busy; i.e., no data can be entered from the keyboard.

d. ERROR. This indicator illuminates when an error in a keyboard entry has been detected by the format program. The ERROR indicator goes out when the RUBOUT, HOME, or BREAK key is pressed.

Line Indicators

a. TRANSMIT MODE. This indicator illuminates when the terminal ON LINE/OFF switch on the master control panel is set to ON LINE and the terminal is transmitting data to the communication line either from the keyboard or the playback cassette.

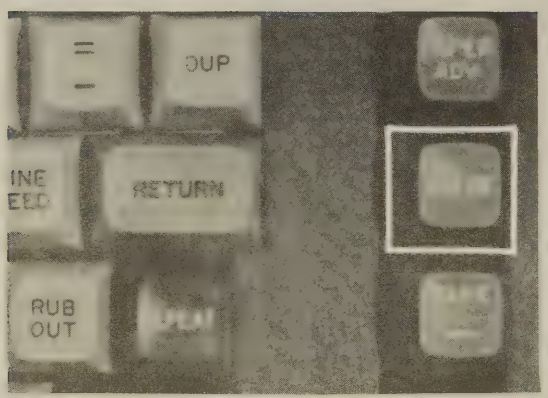
b. RECEIVE MODE. This indicator illuminates when the terminal ON LINE/OFF switch on the master control panel is set to ON LINE and the terminal is receiving or waiting to receive data from the communication line for recording on either the printer or the record cassette.

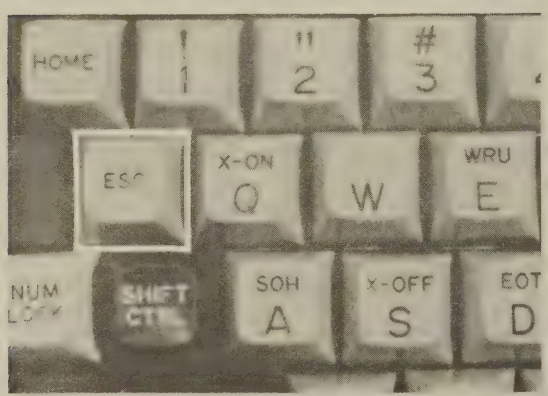
c. RING INDICATOR. This indicator flashes when the terminal is being called by a remote communication device.

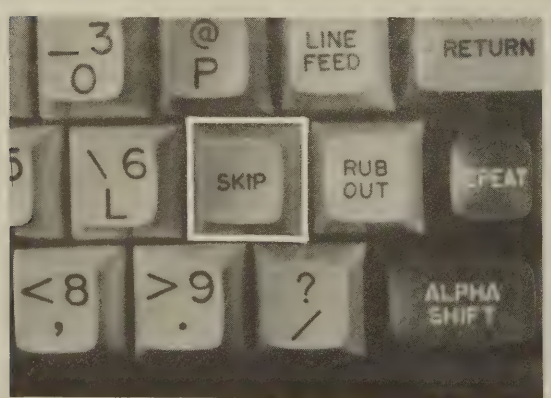
d. TERMINAL READY. This indicator illuminates when the terminal is ready to answer a call from a remote communication device; i.e., when the terminal ON LINE/OFF switch is set to ON LINE.

Keyboard Controls

The following keys control terminal function either in the NORMAL MODE, EXECUTE MODE, or in both. Other special purpose keys are explained on page 70.







NORMAL MODE

a. BREAK. Pressing the BREAK key stops a search, and simultaneously transmits a spacing condition if the terminal ON LINE switch is set to ON LINE.

b. ESC. Pressing the ESC key, followed by pressing one of the keys indicated below, causes the following to occur:

ESC $ — Initiates a search

ESC # — Causes a format program to be loaded into memory from the playback cassette, the EXECUTE MODE to be entered, and execution to begin

ESC ! — Causes the EXECUTE MODE to be entered and the execution of a format program previously loaded into memory to begin.

c. SKIP. Pressing the SKIP key begins continuous playback of the playback cassette. The SKIP key should be used instead of the CONT START switch except when you are recording, duplicating, or editing previously recorded tapes. The SKIP key generates an ASCII code.

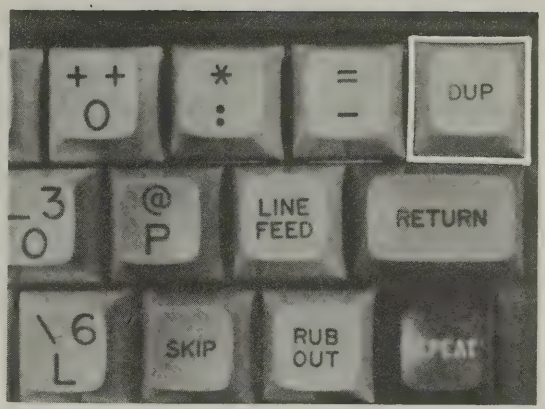
EXECUTE MODE

a. BREAK. Pressing the BREAK key causes the terminal to enter the NORMAL MODE and simultaneously transmits a spacing condition if the terminal ON LINE switch is set to ON LINE.

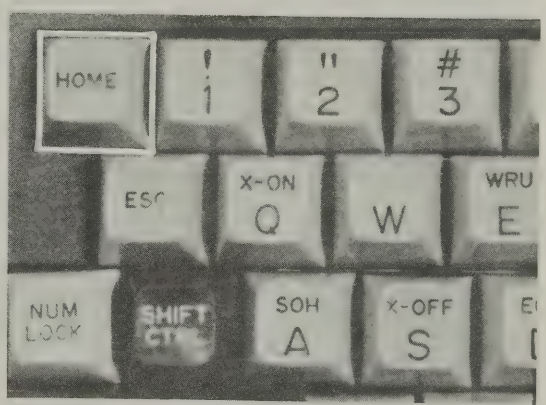
b. ESC. Pressing the ESC key causes the entry buffer to be printed out (but not recorded).

c. SKIP. Pressing the SKIP key terminates an entry from the keyboard and causes the next prompt to be printed out.

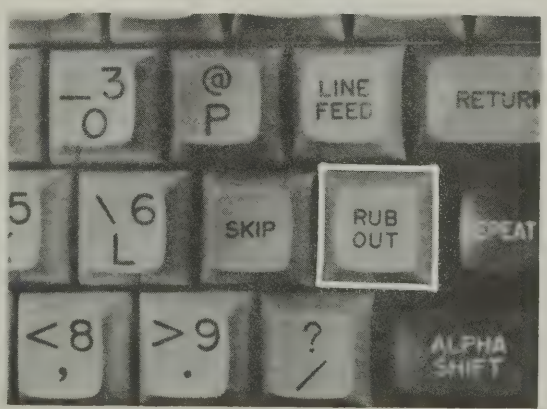
d. DUP. Pressing the DUP key duplicates in the present field (present block) the entry made previously for the corresponding field (either in the present block or the previous block).



e. HOME. Pressing the HOME key nullifies the ERROR indicator and prints out the first prompt in the present block so that an error within that ***block*** may be corrected.



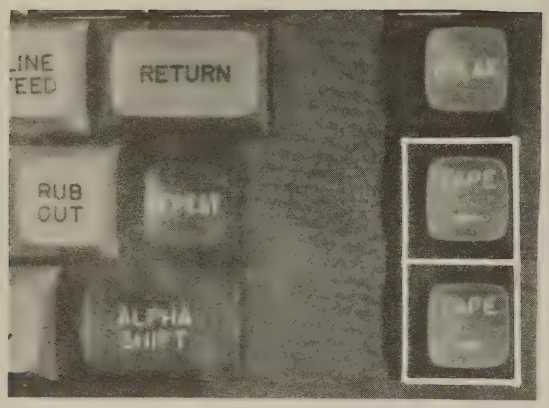
f. RUBOUT. Pressing the RUBOUT key nullifies the ERROR indicator and prints out the first prompt of the present field so that an error within that ***field*** may be corrected.



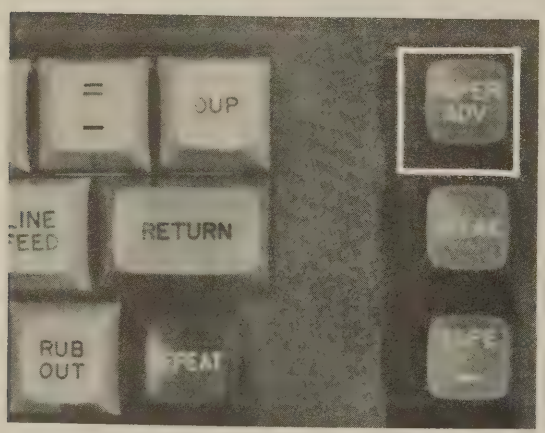
Keyboard

Unlike standard typewriter keys, most of the keys on the Model 742 keyboard generate codes which are transmitted to the printer, record cassette, and/or communication line. The code generated by the Model 742 is the standard USASCII code, usually called "ASCII". For a description of the ASCII code system, refer to Appendix B.

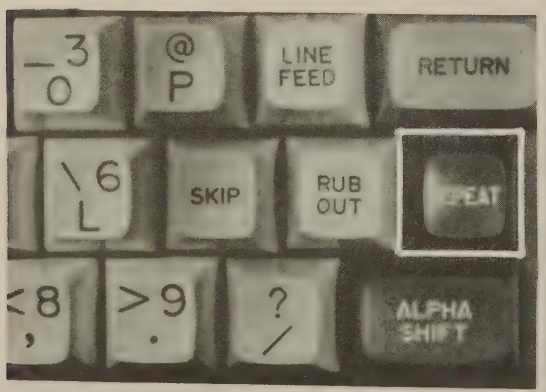
Special Function Keys



a. TAPE, TAPE. These two keys are used to edit data in the record buffer (NORMAL MODE only). After data is entered into the record buffer, either from the keyboard or playback cassette, tape reverse (TAPE) backspaces to the character in error, then the character can be changed from the keyboard. To return to the point where tape reverse (TAPE) was started, press tape forward (TAPE) as many times as necessary. *DO NOT USE THE SPACE BAR.*

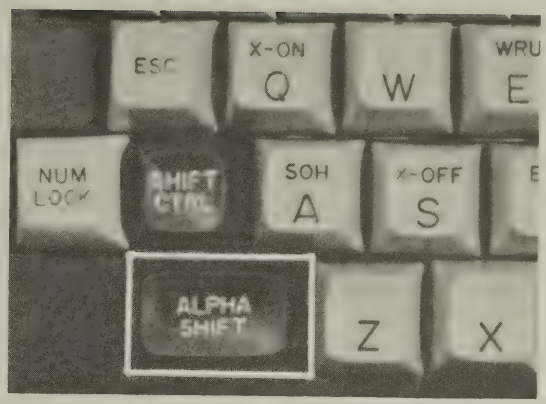


b. PAPER ADV. Pressing this key returns the printhead to the left hand margin, then continuously feeds paper until released. No code is generated.

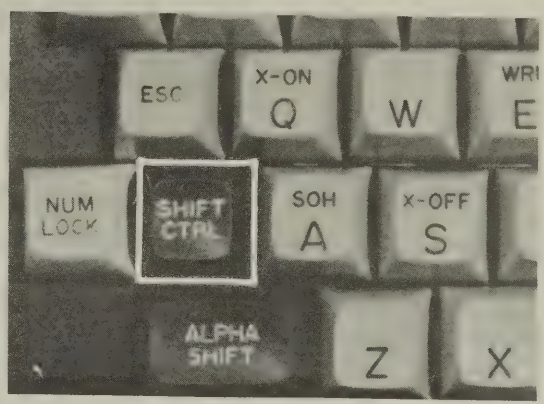


c. REPEAT. This key is used to repeat a character. Press and hold the REPEAT while the character to be repeated is pressed and released.

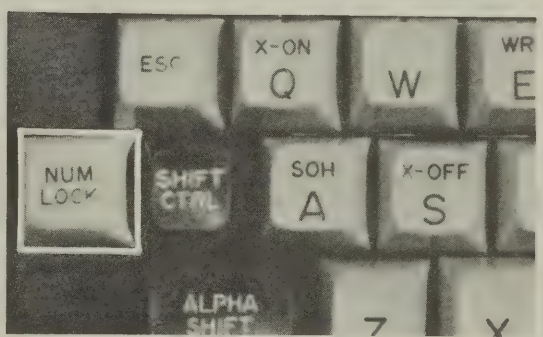
d. ALPHA SHIFT. Releasing this key generates the characters shown in Figure 4-1; pressing this key generates the characters shown in Figure 4-2.



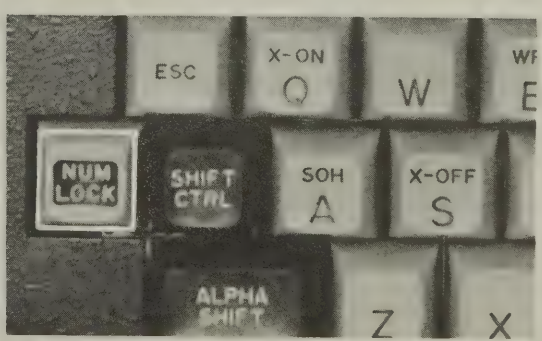
e. SHIFT CTRL. Pressing this key generates the characters shown in Figure 4-3.



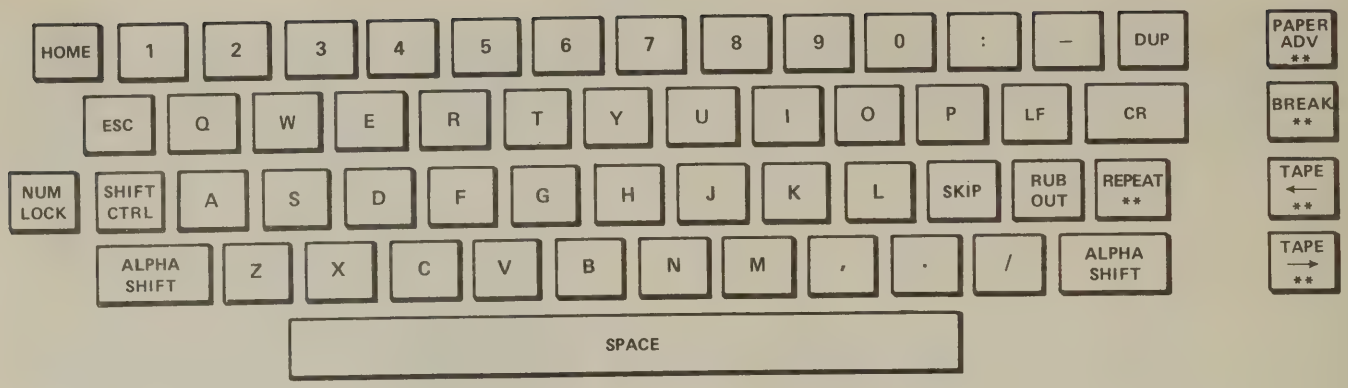
f. NUM LOCK. Pressing this key generates the characters shown in Figure 4-4.



Standard Keyboard



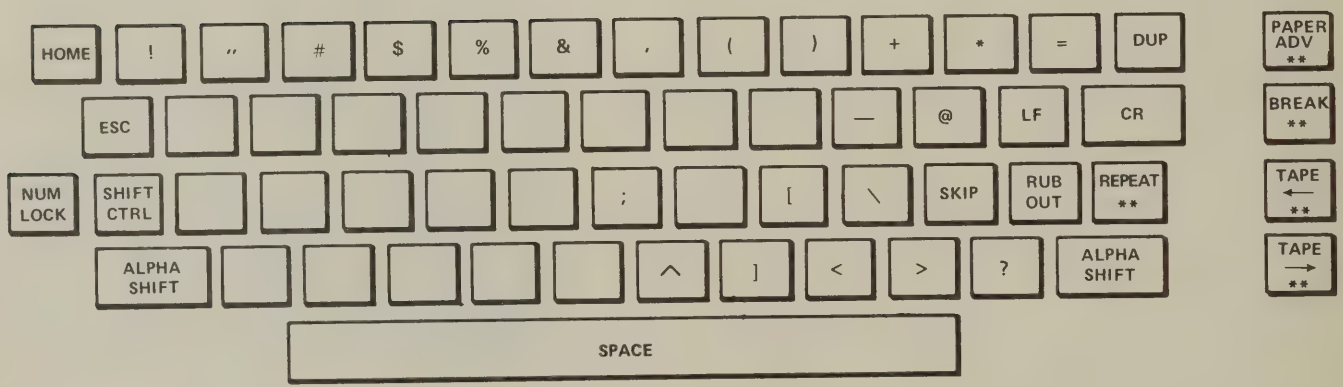
Optional Calculator Cluster Keyboard



NOTES: THE ABOVE CODES ARE GENERATED WHEN THE LABELED KEY IS DEPRESSED AND NEITHER NUM LOCK, SHIFT/CONTROL,OR ALPHA SHIFT IS DEPRESSED OR WHEN BOTH NUM LOCK AND ALPHA/SHIFT BUT NOT SHIFT/CONTROL IS DEPRESSED

** INDICATES THAT IT IS NOT A CODE GENERATING KEY

Figure 4-1. Model 742 Keyboard Unshifted Characters (Standard and Optional Calculator Cluster Keyboard)

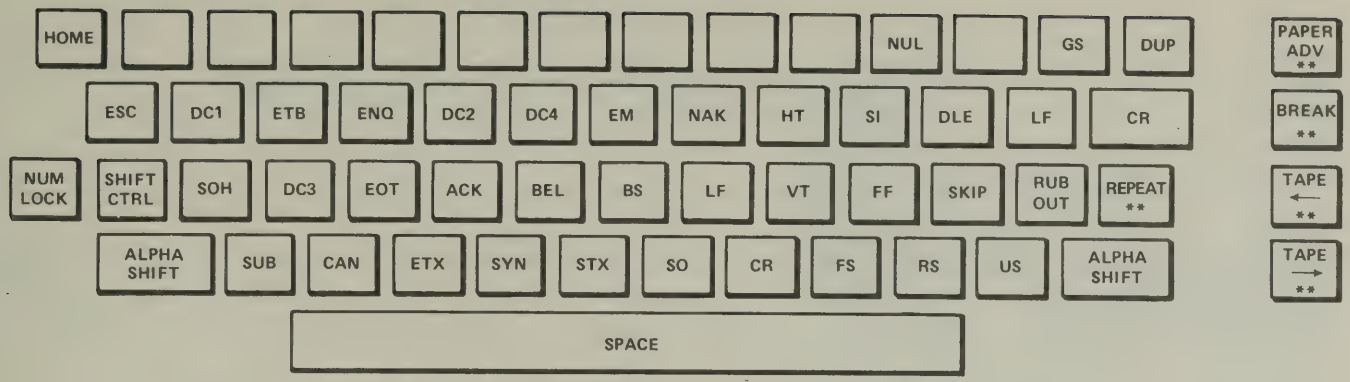


NOTES: THE ABOVE CODES ARE GENERATED WHEN THE LABELED KEY AND THE ALPHA/SHIFT KEY ARE DEPRESSED WITH THE NUM LOCK AND SHIFT/CTRL NOT DEPRESSED, OR WHEN SHIFT/CTRL AND NUM LOCK ARE DEPRESSED AND THE ALPHA/SHIFT IS NOT DEPRESSED.

** INDICATES THAT IT IS NOT A CODE GENERATING KEY

A BLANK KEY INDICATES A CODE IS NOT GENERATED

Figure 4-2. Model 742 Keyboard Shifted Characters (Standard and Optional Calculator Cluster Keyboard)

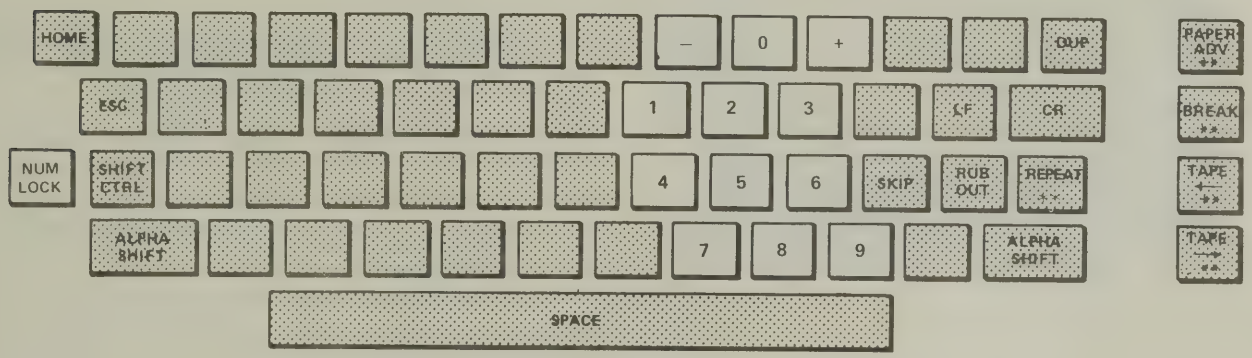


NOTES: THE ABOVE CODES ARE GENERATED WHEN THE LABELED KEY AND THE SHIFT/CTRL KEY ARE DEPRESSED WITH NUM LOCK AND ALPHA/SHIFT NOT DEPRESSED, OR WHEN BOTH SHIFT/CTRL AND ALPHA/SHIFT ARE DEPRESSED AND NUM LOCK IS A DON'T CARE

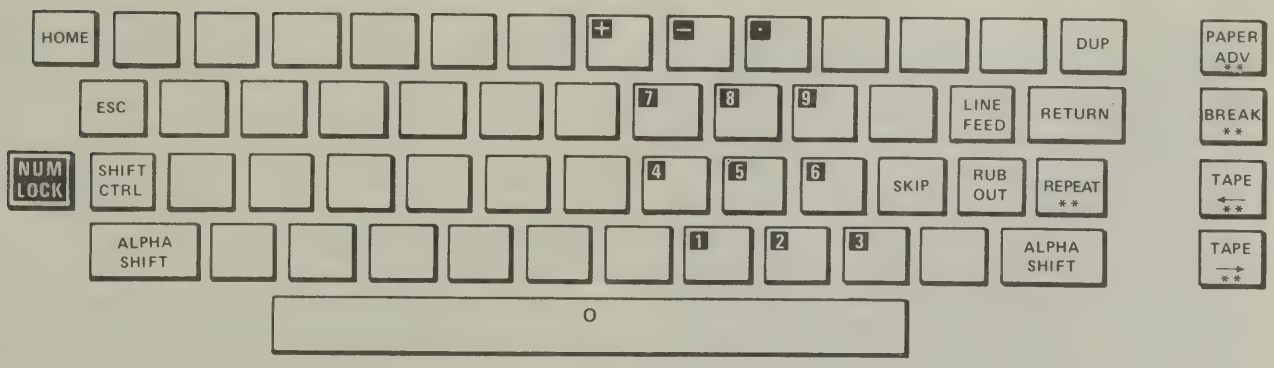
** INDICATES THAT IT IS NOT A CODE GENERATING KEY

A BLANK KEY INDICATES A CODE IS NOT GENERATED

Figure 4-3. Model 742 Keyboard Control Characters (Standard and Optional Calculator Cluster Keyboard)



Standard Keyboard



Optional Calculator Cluster Keyboard

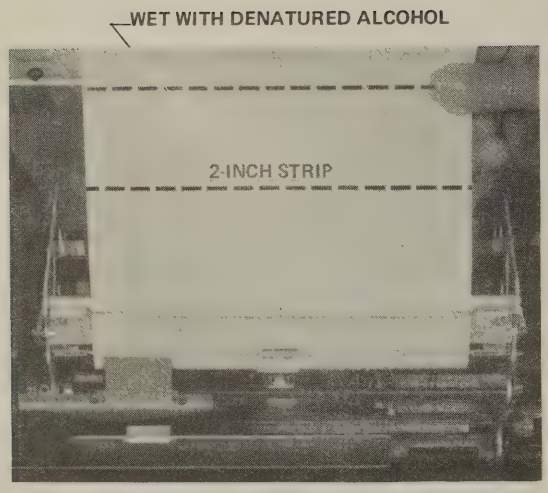
NOTES: THE ABOVE CODES ARE GENERATED WHEN THE LABELED KEY AND THE NUM LOCK IS DEPRESSED AND THE SHIFT/CTRL AND ALPHA/SHIFT ARE NOT DEPRESSED.

** INDICATES NOT A CODE GENERATING KEY.

A BLANK KEY INDICATES A NUL CHARACTER IS GENERATED.

Figure 4-4. Model 742 Standard and Optional Keyboards Numeric Characters

SECTION V
CARE AND CLEANING



CLEANING THE PRINTHEAD

The printhead should be cleaned each time a new roll of thermal paper is loaded into the terminal. Clean more often if the printed image begins to fade because of residue accumulating on the printhead.

1. Lift the terminal cover and raise the window.
2. Remove the thermal paper from the platen.
3. On a sheet of good quality bond paper, wet a 2-inch wide strip with high grade (95%) denatured ethyl alcohol.
4. Quickly insert the bond paper into the terminal in the same manner as thermal paper.
5. Type five lines on the alcohol-wetted strip of the bond paper. Use the REPEAT key to accelerate the process.
6. Advance the bond paper to a dry area and type two more lines.

   NOTE
   The printer will not print a visible image on the bond paper.

7. Remove the bond paper and reload the thermal paper.

CLEANING THE PLATEN

To maintain uniform line spacing, clean the platen every 3 months or more often if line spacing becomes uneven or too close.

1. Set the terminal POWER switch to OFF.
2. Lift the window/pinch roller.
3. Remove the thermal paper from the platen and paper chute, leaving the window/pinch roller up.

4. Manually slide the printhead to the far right side.

5. Wipe the left side of the platen with a soft lintless cloth or paper towel moistened with denatured alcohol. Manually rotate the platen to ensure that the entire platen is cleaned.

6. Manually slide the printhead to the far left side and clean the right side of the platen.

7. Reload the thermal paper into the paper chute as described in Section I.

CLEANING THE CARRIAGE ROD

To ensure continued smooth and quiet operation of the printer mechanism, clean the carriage rod every 3 months or whenever the rod appears dirty. Failure to do this can result in increased audible noise and can reduce the lifetime of the printer mechanism.

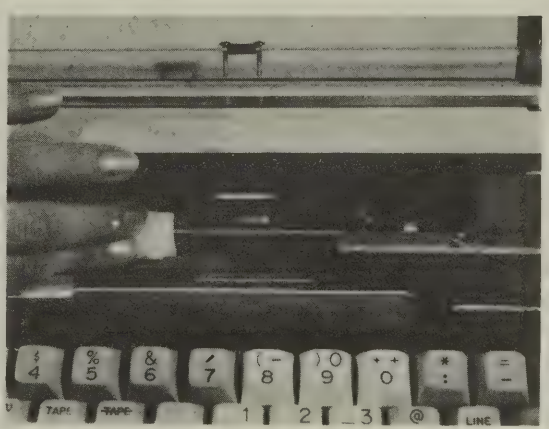
1. Set the terminal POWER switch to OFF.

2. Lift the window/pinch roller.

3. Remove the thermal paper from the paper chute, leaving the window/pinch roller up.

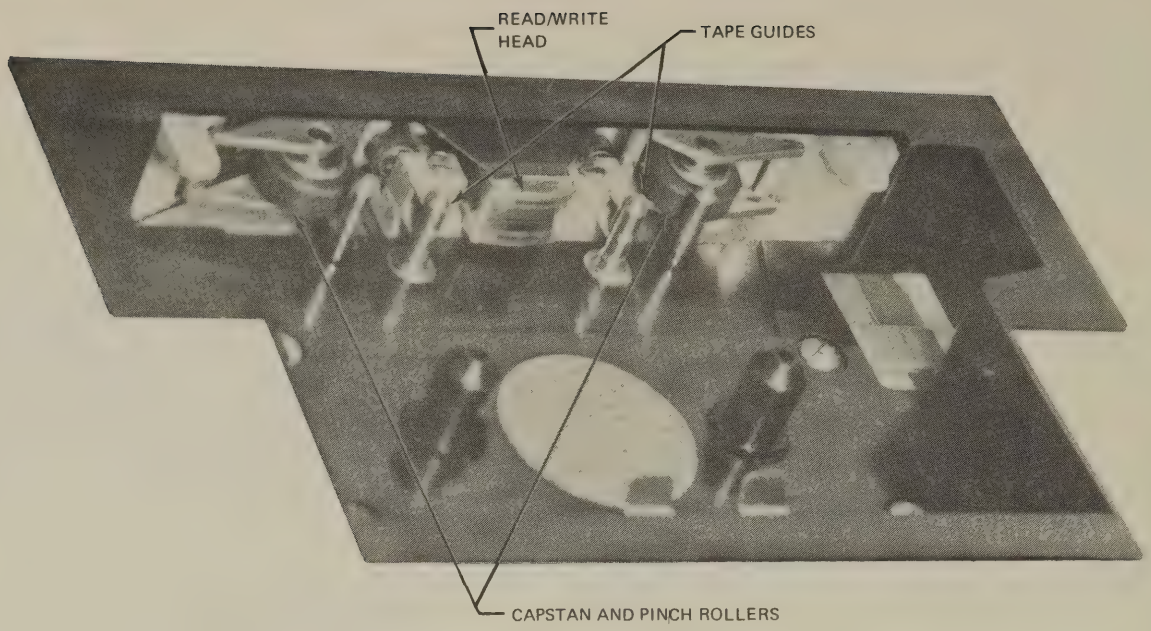
4. Manually slide the printhead to the far right side.

,5. Wipe the left side of the carriage rod with a soft lintless cloth or paper towel moistened with denatured alcohol.



6. Manually slide the printhead to the far left side and clean the right side of the carriage rod.

7. Reload the thermal paper into the paper chute as described in Section I.



Tape Transport Cleaning Areas

CLEANING THE CASSETTE TAPE TRANSPORTS

Carefully follow the tape manufacturers' recommendations for proper handling and storage of magnetic tape used with the Model 742. In addition, clean the tape read/write heads, capstans, pinch rollers, and tape guides at regular intervals. To enhance cassette system data reliability (minimize data error rate), the following cleaning procedures should be completed once each day, or after each 8 hours' operation.

1. Switch OFF data terminal power and remove the tape cassettes from the transports.

2. Lift the terminal cover to its stops and open the cassette transport doors.

3. **Use clean Q-tip® type cotton swabs saturated with high grade (95%) denatured ethyl alcohol to clean the pinch rollers, capstans, tape guides, and read/write heads shown in the figure.**

    a. Swab the pinch rollers across the rolling surface a section at a time; then rotate the roller with the swab and clean another section. Discard the Q-tip when it becomes discolored and resume cleaning with a new Q-tip. Continue swabbing both pinch rollers in both transports until no discoloration appears on the Q-tip.

    b. Clean the tape guides by inserting the alcohol-saturated swab into each side of the tape guides. Change the Q-tips until no discoloration appears.

c. Swab the read/write heads using a back-and-forth motion across the heads. Change the Q-tips until no discoloration appears.

d. Lower the terminal cover and swab the capstans (located directly below the pinch rollers). Clean the length of the capstans, changing Q-tips until no discoloration appears.

CARING FOR TAPE CASSETTES

To ensure maximum reliability and longevity of tape cassettes, follow the procedures listed below:

1. Always REWIND the tape to clear leader before removal from the cassette transport or switching off power. Clear leader is not sensitive to dirt and dust.

2. Always return the tape cassette to its plastic storage container when not in use.

3. Always store the container in a clean, cool, dry location.

SECTION VI
INSTALLATION

UNPACKING

The Model 742 Programmable Data Terminal is a self-contained unit, requiring no auxiliary equipment for standard data terminal operation. While unpacking visually check the data terminal before connecting the ac power cord. Look for obvious shipping damage such as broken cassette windows, a cracked or bent terminal cover, or packing material inside the case. Check that the terminal cover opens and closes freely. Remove the PC card rack covers of the ASR and KSR units as instructed in the subsection below and press down on the ejectors of all PC cards to ensure they are securely plugged into their sockets.

CAUTION

Before connecting the ac power cord, load paper in the terminal as described in Section I of this manual. The printer should never be operated without paper on the platen (drive roller); damage to both platen and printhead could result.

Check that all connectors are secure. Check that all keyboard keys operate smoothly without binding. Lift the window/pinch roller (Figure 6-1) and manually move the printhead across its carriage to check that the printhead moves freely without interference.

ACCESS TO THE PC CARDS

PC cards are located in both the upper and lower units. Occasionally, it may be necessary to service the PC cards or check that they are securely plugged into their connectors, particularly after shipping or moving the terminal.

WARNING

Disconnect the power cord to the terminal before proceeding: personal injury and equipment damage could result.

Upper Unit PC Card Access

1. Loosen the two fasteners at the rear of the upper unit (see Figure 6-2) about ½ turn and slide the upper unit cover toward the keyboard.

2. Loosen the screw in each corner of the PC card rack cover (top center of the upper unit), slide the cover toward the keyboard, and lift it off over the four screws.

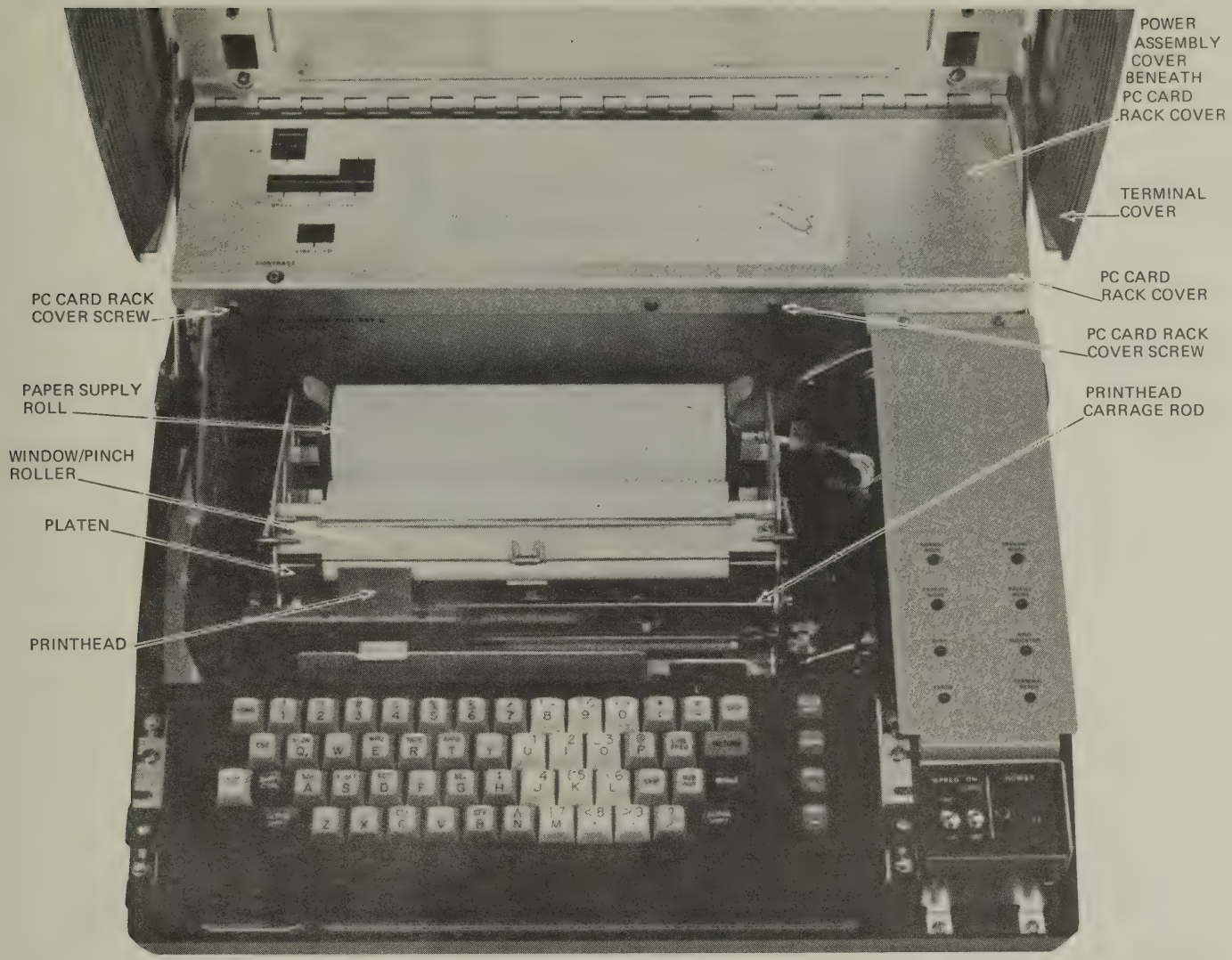


Figure 6-1. Model 742 Lower Unit Internal Components

Lower Unit PC Card Access

1. Unplug the ac power cord, raise the terminal cover, and loosen the two PC card rack cover screws (see Figure 6-1).

2. Lift the PC card rack cover up and off.

3. To gain access to the power assembly, terminal board (TB1), and fuses, remove the two retaining screws and lock washers and lift off the power assembly cover.

CAUTION

Replace all covers before applying power to the terminal.

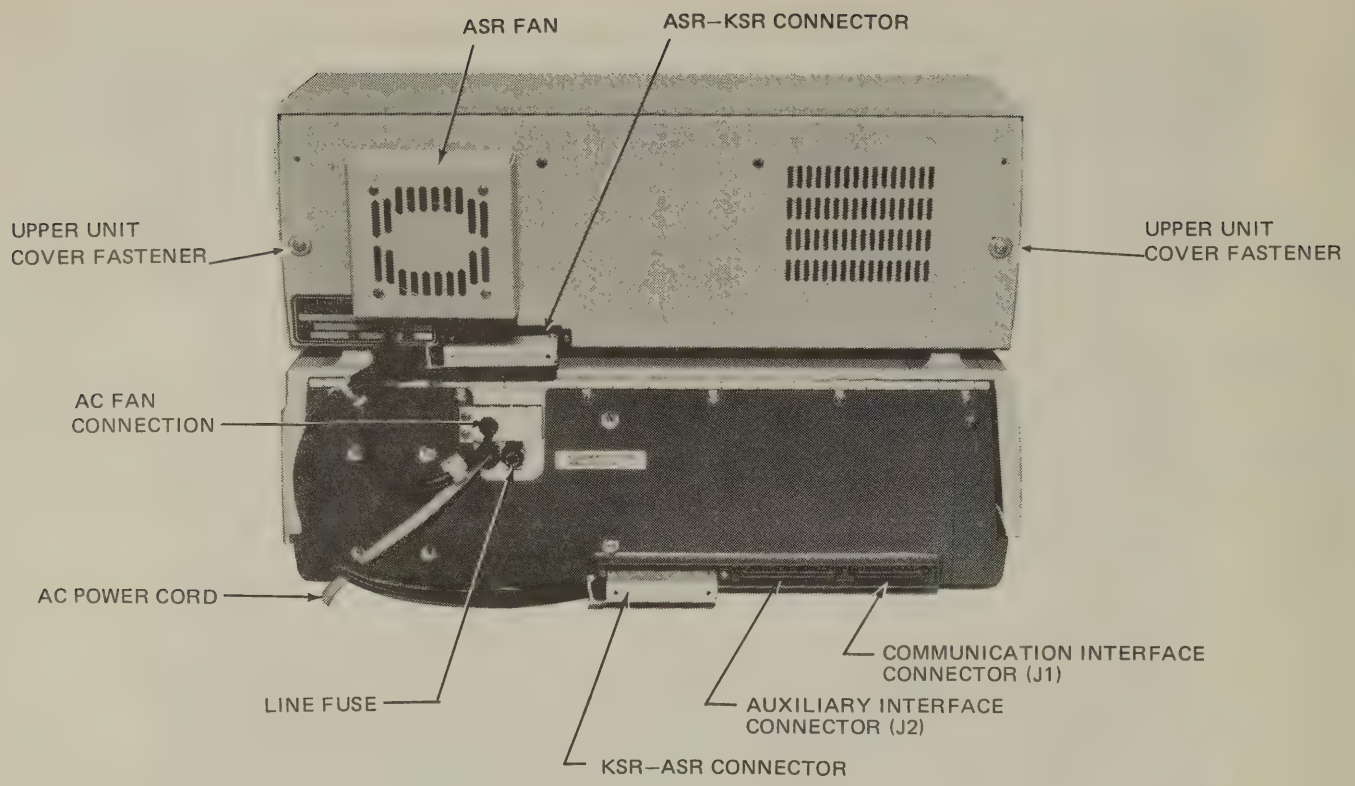


Figure 6-2. Model 742 External Connections (Rear View)

4. To replace the PC card rack cover, engage the three tongues along the back of the cover with the three slots in the rack; then fold down the cover as if on a hinge. Tighten the two screws.

DIMENSIONS

The terminal should be located in an area where its air inlets and outlets are unobstructed. Model 742 dimensions are shown in Figure 6-3.

POWER CONNECTIONS

The standard Model 742 power connection is 115 Vac, 50/60 Hz. Before plugging the power cord into a 230-volt outlet, be sure the terminal is wired for 230 volts. Figure 6-4 shows the connections at terminal block TB1 for 115 V and 230 V operation. TB1 is located under the power assembly cover which is under the PC card rack cover shown in Figure 6-1. For 230 V operation replace fuse F1 at the terminal power cord exit (see Figure 6-2) with a Slo-Blo 1.5A, 250 V fuse. Replace the power cord plug to match your 230 V wall receptacle.

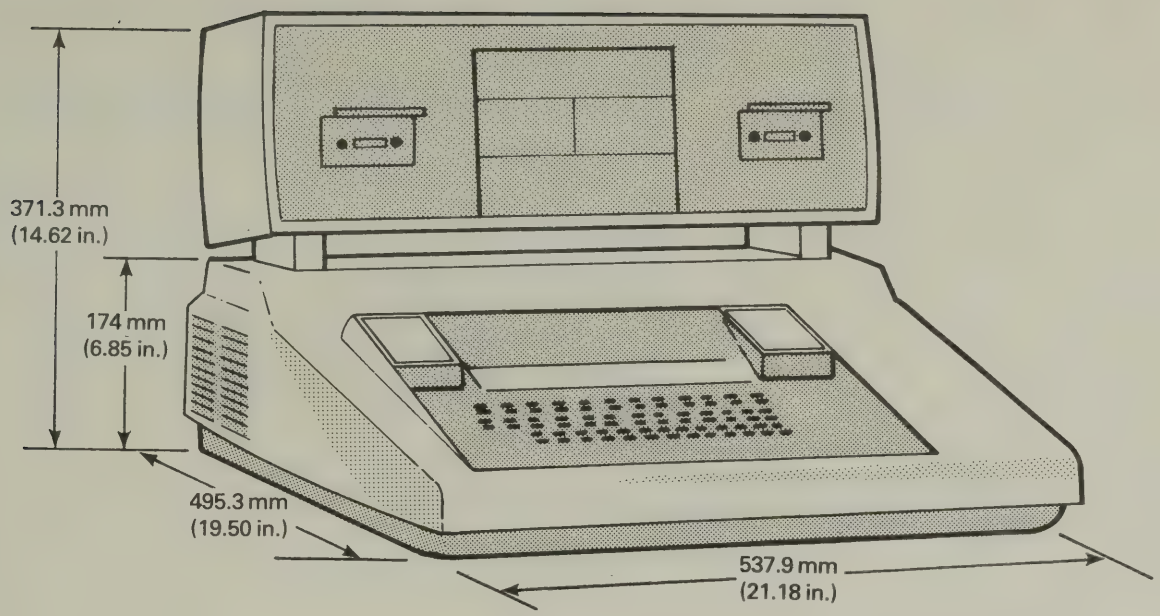


Figure 6-3. Model 742 Overall Dimensions

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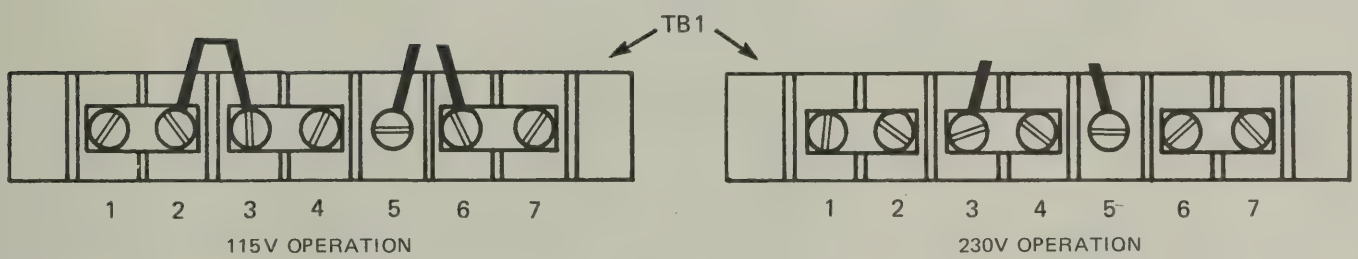


NOTE

TB1 is located under the Power Assembly Cover (See Figure 6-1). Fuse F1 at the rear of the Model 742 must be a 3A, 120V Slo Blo fuse or a 1.5A, 250V Slo Blo fuse, as appropriate.

Figure 6-4. 115 and 230 Volt Connections at the Power Supply Terminal Block (TB1)

STRAPPABLE END-OF-LINE ALARM OPTION

The end-of-line alarm may be inhibited from sounding automatically at column 72 by removing resistor R20 (10 ohms) from between J1 and J2 on the Printer Control PC card (red tabbed card in slot A2 of the lower unit PC card rack). This resistor is easily pulled out or inserted in its connector by hand. This will not inhibit the alarm from sounding upon receipt of the ASCII 'BEL' character.

OPTIONAL EQUIPMENT

1200-Baud Internal Modem Kit (TI Part No. 973295-001).

To incorporate this option install the Modem Line Interface PC card (TI Part No. 959348-0001) in PC card slot A8 (Figure 6-5) as shown in the installation instructions provided with the kit. (Note that the Expansion PC card, slot A7, must be removed before installing the internal modem.) The data terminal may now be connected to a Bell System Type CBS Data Access Arrangement (DAA) with the 1200-baud internal modem cable assembly (TI Part No. 973260-0001); pin assignments are listed in Table 6-1. After connecting to the DAA line, adjust the modem level as specified on the DAA. This kit may be used only with the Model 742 terminals with automatic answer line discipline option.

Table 6-1. 1200-Baud Internal Modem Cable Pin Functions (Cable 973260-0001)

Model 742 Terminal (J1)	Cable Lead Colors	DAA Terminal Label	Signal Name
7	Black	SG	Signal ground
B	Brown	DA	Data access
D	Red	OH	Off hook
E	Orange	DT	Data tip
3	Yellow	DR	Data ring
J	Green	RI	Ring indicator
2	Blue	SH	Switch hook
1	White	CCT	Coupler cut through

Auxiliary Cable

The auxiliary interface port is accessible through the J2 connector at the rear of the Model 742 terminal (see Figure 6-2). An optional 6-foot auxiliary cable (TI Part No. 973265-0001) is available with a standard J2, dual 15-pin connector (Amp No. 480110-2) at one end and a standard EIA, 25-pin female connector (Amp No. 205207-1) at the other end. Pin assignments are shown in Table 6-2. Install cable with the slotted section of the connector hood facing up.

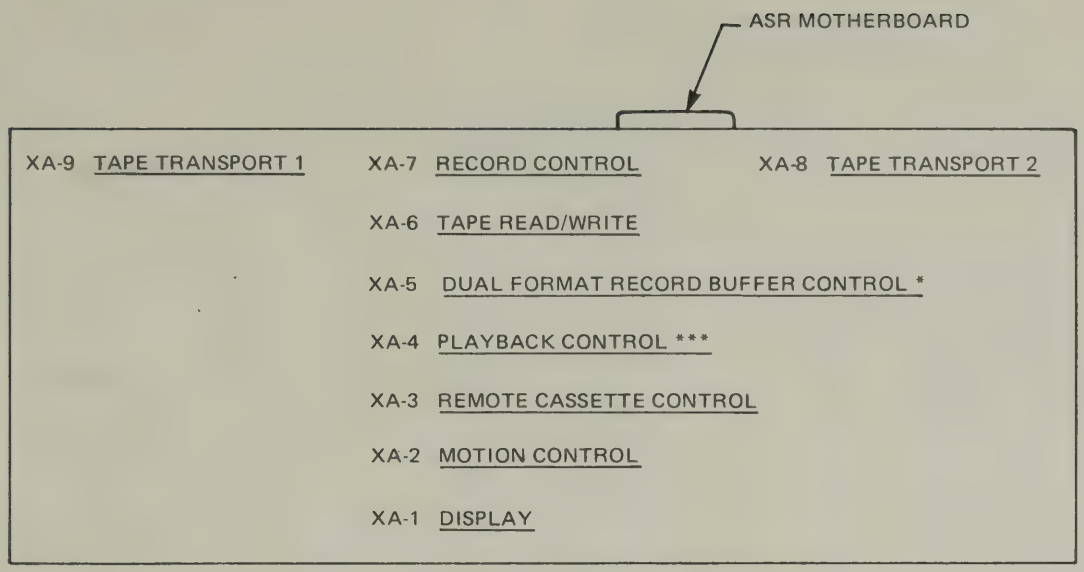
Optional PROM

To install new optional PROM's, follow the instructions which accompany the PROM kit. The PROM network (U37) is mounted on the Processor PC card, slot A6.

INTERFACE CONNECTIONS AND CABLES

EIA Interface

The standard, 6-foot, EIA RS-232-compatible, line interface cable (TI Part No. 969626-0001) plugs into connector slot J1 at the rear of the terminal (see Figure 6-2). This cable has a standard, TI, dual, 10-pin



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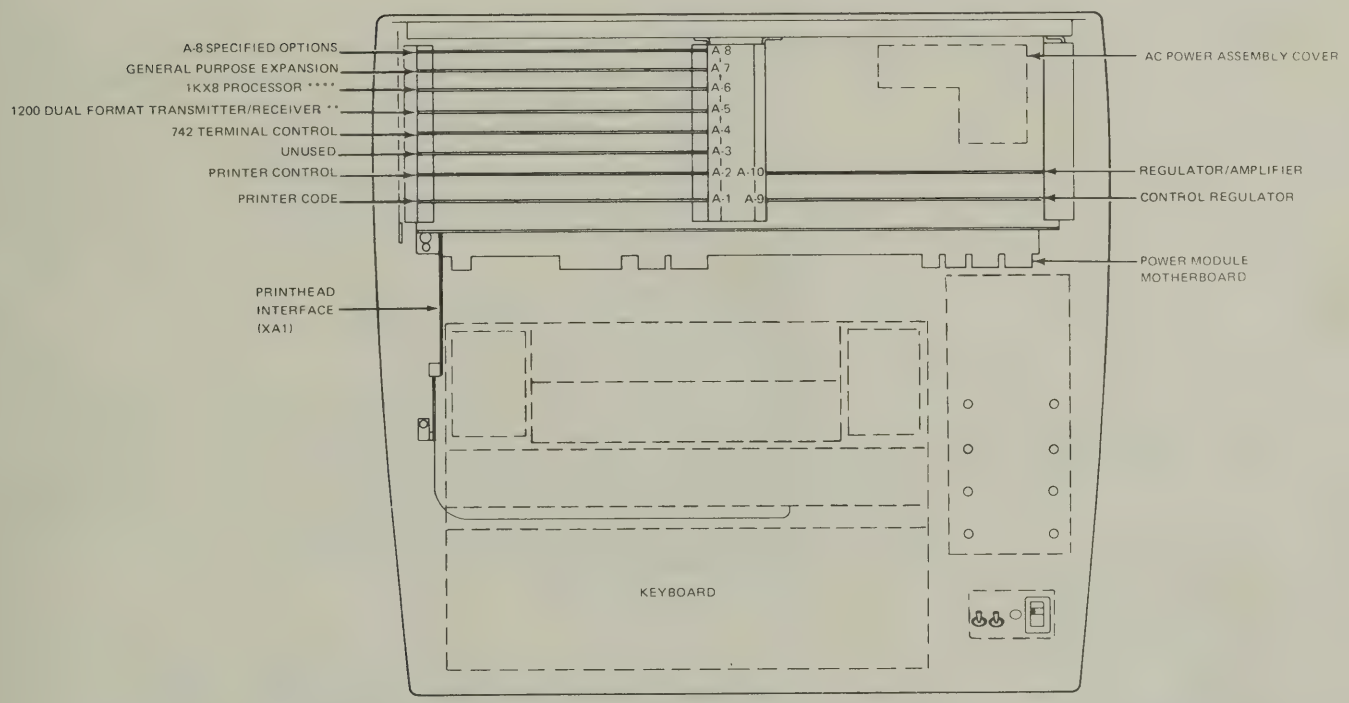
ASR Module Assembly (Upper Unit) PC Card Locations



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KSR Module Assembly (Lower Unit) PC Card Locations

NOTES:

* XA-5 card should have R13 between J1 & J2 and no R8 or R9.
** A-5 card should have R17 installed between J3 & J4, and R7, 19, and 20 removed.
***XA-4 card (Part No. 981319) should have R5 installed between J5 & J6 (not between J3 & J4).
****A6 card should have R4, 7, 8, 9, 10, and 12 removed.

Figure 6-5. Model 742 PC Card Locations

Table 6-2 Auxiliary Cable Pin Functions
(Cable 973265-0001)

742 Terminal (J2)	EIA Connector	Signal Name
11	3	EIA Data Out
12	12	EIA Control In
13	11	EIA Control
1	7	EIA Signal Ground
P	(not connected)	AUXIENAS – (for system test only, should be disconnected)
L	(not connected)	FTSW – (should be disconnected)
	4	Request to Send } Signals tied together
	5	Clear To Send } Signals tied together
	6	Data Set Ready
	8	Data Carrier Detect } Signals tied together
	20	Data Terminal Ready } Signals tied together

connector (Amp No. 582963-2) at one end and a standard 25-pin, male EIA connector (Amp No. 205208-1) at the other end. Pin assignments are listed in Table 6-3.

Internal 1200-Baud Modem Interface (For Bell Type CBS DAA)

The optional 1200-baud internal modem cable is a 6-foot line interface cable (TI Part No. 973260-0001) which plugs into connector slot J1 at the rear of the terminal (see Figure 6-2). It has a standard TI, dual 10-pin connector (Amp No. 582963-2) at one end, and 8 number 4 spade lugs at the other end. The signal levels of this interface are compatible with EIA Standard RS-232-C. The interface may be used with a Bell Type-CBS Data Access Arrangement (DAA).

Multiple Communication Interface

The Multiple Communication Option (MCO) uses two cables (primary and secondary) for interfacing. The primary cable is a 10-foot, EIA RS-232-compatible line interface cable (TI Part No. 995311-0001) which plugs into connector slot J1 at the rear of the terminal (see Figure 6-2). The primary cable has a standard TI, dual, 10-pin connector (Amp No. 582963-2) at one end, and a standard EIA, 25-pin, male connector (Amp No. 205208-1) at the other end. Pin assignments are listed in Table 6-4.

The secondary cable is available in four different configurations. All four cables are 10-foot, EIA RS-232-compatible (except TI Part No. 995313-0001 which is a "Y" cable with one connector configured for EIA RS-232 and the other connector configured for a multidrop polled communication line using an SN75109 as a line driver and an SN75107 as a line receiver) line interface cables which plugs into connector slot J2 at the rear of the terminal (see Figure 6-2). All four cables have a standard TI, dual, 15-pin connector (Amp No. 582147-5) at one end, with the following connectors at the other end:

- TI Part No. 995312-0001 is a "Y" cable; one connector is a standard EIA, 25-pin, male connector (Amp No.

Table 6-3 EIA With Auto Answer Interface Cable Pin Functions[9] (Cable 969626-0001)

Connector Pin Numbers		Circuit	Pin Function
Terminal (J1)	Data Set		
6	20	CD	Data Terminal Ready[1]
7	7	AB	Signal Ground
8	5	CB	Clear to Send[2]
9	6	CC	Data Set Ready[3]
10	3	BB	Received Data
A	1	AA	Protective Ground
F	4	CA	Request to Send[6]
H	2	BA	Transmitted Data
K	8	CF	Data Carrier Detect[4]
J	22	CE	Ring Indicator[5]
5	11	SA	Reverse Channel Transmit[7]
4	12	SB	Reverse Channel Receive[8]

1. Held to EIA ON (> +3 V) when terminal is on line, held to EIA OFF (< −3 V) when terminal is off line and to disconnect a call.
2. Held to EIA ON by modem to permit transmission; required for transmission.
3. Held to EIA ON by modem when modem is operating; required for operation.
4. Held to EIA ON by modem during receipt of carrier; required for data reception.
5. Normally EIA OFF; signal comes high with ring of incoming call.
6. Held to EIA ON when terminal is ready to transmit.
7. Held to EIA ON when terminal is in receive mode and to EIA OFF in transmit mode.
8. Held to EIA ON by modem to indicate presence of reverse channel tone: EIA OFF if no tone.
9. This cable for external modem (data set) only.

Table 6-4 Multiple Communication Option EIA Primary Data Set Interface Cable Pin Functions (Cable 995311-0001)

Connector Pin Numbers		Pin Functions[2]
PDT Terminal (J1)	Data Set[2]	
A	1	Protective Ground
3	2	Transmitted Data (DATOTJ1)
C	3	Received Data (DATINJ1)
1	4	Request to Send (RTSJ1)
2	5	Clear to Send (CTSJ1)
D	6	Data Set Ready (DSRJ1)
7	7	Signal Ground
E	8	Data Carrier Detect (DTRJ1)
B	20	Data Terminal Ready (DCDJ1)
J	22	Ring Indicator

NOTES

1. All are used with external modem.
2. Uses standard RS-232C-Compatible, 25-pin connector.

205208-1); and the other connector is a standard EIA, 25-pin female connector (Amp No. 205207-1). Pin assignments are listed in Table 6-5.

- TI Part No. 995313-0001 is a "Y" cable with one connector a standard EIA, 25-pin, female connector (Amp No. 205207-1); the other cable connections are three number-6 spade lugs. Pin assignments are listed in Table 6-6.

- TI Part No. 995314-0001 is a "Y" cable with one connector a standard EIA, 25-pin, male connector (Amp No. 205208-1); and the other connector is a standard EIA, 25-pin, female connector (Amp No. 205207-1). Pin Assignments are listed in Table 6-7.

- The TI Part No. 995315-0001 cable has a standard EIA, 15-pin, male connector (Amp No. 205306-1). Pin assignments are listed in Table 6-8.

Table 6-5 Multiple Communication Option EIA Secondary Data Set and Auxiliary EIA Interface Cable Pin Functions (Cable 995312-0001)

Connector Pin Numbers			Pin Functions
PDT Terminal (J2)	Data Set[1]	Auxiliary[1]	
A	1		Protective Ground
7	2		Transmitted Data (DATOTJ2)[2]
S	3		Received Data (DATINJ2)[2]
N	4		Request to Send (RTSJ2)[2]
D	5		Clear to Send (CTSJ2)[2]
5	6		Data Set Ready (DSRJ2)[2]
1	7		Signal Ground
3	8		Data Carrier Detect (DCDJ2)[2]
K	20		Data Terminal Ready (DTRJ2)[2]
15		2	Status In 2 (STATIN2)
H		3	Transmitted Data (PRNDAT)
B		7	Signal Ground
J		11	Status In 1 (STATIN1)
14		12	Control Out 1 (CONTOUT1)
		4	Request to Send[3]
		5	Clear to Send[3]
		6	Data Set Ready[4]
		8	Data Carrier Detect[4]
		20	Data Terminal Ready[4]

NOTES

1. Uses standard RS 232C-Compatible, 25-pin connector.
2. Used only with external modem.
3. Pins 4 and 5 jumpered together.
4. Pins 6, 8, and 20 jumpered together.

Table 6-6. Multiple Communication Option EIA Auxiliary and Multidrop Interface Cable Pin Functions (Cable 995313-0001)

Connector Pin Numbers			Pin Functions
PDT Terminal (J2)	Auxiliary[1]	Multidrop	
1	1		Protective Ground
15	2		Received Data (STATIN2)
K	3		Control Out 1 (CONTOUT1)
J	4		Status in 1 (STATIN1)
6	5		Control Out 2 (CONTOUT2)
A	7		Signal Ground
F		E1	Signal High (SIGHI)
E		E2	Signal Low (SIGLO)
C		E3	Signal Ground

NOTE

1. Uses standard RS-232C-Compatible, 25-pin connector.

Table 6-7 Multiple Communication Option EIA Automatic Calling Unit (Bell ACU 801) and Auxiliary Interface Cable Pin Functions (Cable 995314-0001)

Connector Pin Numbers			Pin Functions
PDT Terminal (J2)	ACU[1]	Auxiliary[1]	
1	1		Protective Ground
14	2		DPR (CONTOUT1)
J	3		ACR (STATIN1)
6	4		CRQ (CONTOUT2)
2	5		PND (STATIN3)
4	6		PW1 (STATIN4)
A	7		Signal Ground
R	13		DSS (STATIN5)
8	14		NB1
10	15		NB2
9	16		NB4
M	17		NB8
5	22		DLO (DSRJ2)
H		3	Transmitted Data (PPNDAT)
3		11	Data Carrier Detect (DCDJ2)
C		7	Signal Ground
		4	Request to Send[2]
		5	Clear to Send[2]
		6	Data Set Ready[3]
		8	Data Carrier Detect[3]
		20	Data Terminal Ready[3]

NOTES

1. Uses standard RS-232C-Compatible, 25-pin connector.
2. Pins 4 and 5 are jumpered together.
3. Pins 6, 8, and 20 are jumpered together.

Table 6-8 Multiple Communication Option EIA Auxiliary Interface Cable Pin Functions (Cable 995315-0001)

Connector Pin Numbers		Pin Functions
PDT Terminal (J2)	Auxiliary[1]	
15	4	Received Data (STATIN2)
J	5	Status In 1 (STATIN1)
6	6	Control Out 1 (CONTOUT1)
C	15	Signal Ground

NOTE

1. Uses 15-pin connector.

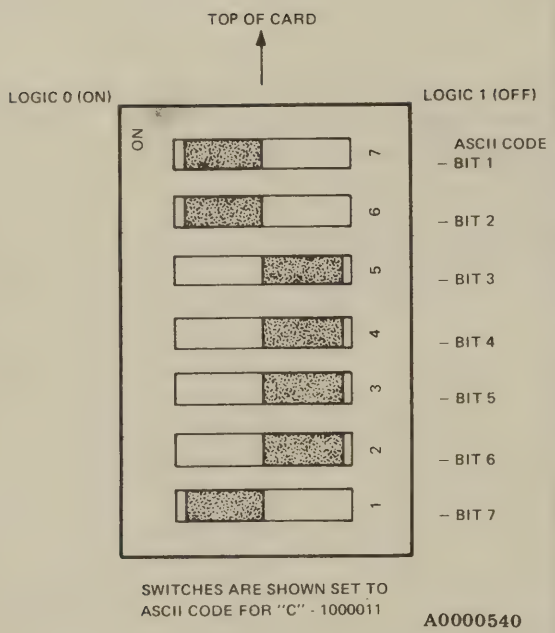


Figure 6-6. Pencil Switches for Setting Multidrop Station ID

Auxiliary Interface

The optional auxiliary interface cable is a 6-foot auxiliary cable (TI Part No. 973265-0001) which plugs into connector slot J2 at the rear of the terminal (see Figure 6-2). It has a standard, dual 15-pin connector (Amp No. 480110-2) at one end and a standard, 25-pin female, EIA connector (Amp No. 205207-1) at the other end. The signal levels are compatible with EIA Standard RS-232-C. Pin assignments are listed in Table 6-2.

STATION ID SWITCH SETTINGS

If your Model 742 Terminal is equipped with the multidrop (polling) discipline, seven small "pencil" switches must be set as your ASCII-character station identifier (ID). The seven pencil switches are located on the General Purpose Expansion PC card (slot A7 in the lower unit PC card rack). To set the switches remove the PC card and set the switches to your ID character according to the logic polarity shown in Figure 6-6.

ADJUSTMENTS

Print Contrast

To adjust the printed image contrast use a screwdriver to rotate the contrast control under the terminal cover (Figure 6-1). Rotate clockwise to increase contrast; to decrease, rotate counterclockwise.

Modem Level Adjustment

Terminals which incorporate the optional internal data set (modem) must have the modem output adjusted when the terminal is installed. The adjustment also should be rechecked periodically.

Switched Telephone Network. Connection to the switched telephone network ordinarily is made by means of a Bell Data Access Arrangement (DAA) provided by the local telephone company. The telephone company indicates the maximum permissible power level of the combined received and transmitted data signals present at the terminals

of the coupling device. This level is usually expressed in dBm (0 dBm = 1 milliwatt dissipated in a 600-ohm load) and is stamped on the face of the coupler.

Your Model 742 may be equipped with one of two types of optional 1200-baud Internal Modem PC cards in slot A8. One type Modem PC card has a circular configuration of seven sockets around a single center socket, located on the right front of the PC card. The seven sockets are labelled 0, **−2, −4, −6, −8, −10,** and **−12.** The other type Modem PC card has a potentiometer marked R91 on the back top center of the card.

1. Circular Socket configuration. To adjust the modem signal level on this type card, proceed as follows:

   a. Switch POWER to OFF and unplug the power cord. Lift the terminal cover.

   b. Remove the lower unit PC card rack cover and lift out the Expansion PC card from slot A7.

   CAUTION

   The Expansion PC card in slot A7 must be removed first to prevent damage to the status display panel cable.

   c. Lift out the Modem PC card from slot A8 and move the jumper strap within the circular socket configuration to the socket which is the next lowest from the value stamped on the DAA. (The jumper strap is inserted in the 0 socket at the factory.)

   d. Replace the Modem PC card into slot A8 and replace the Expansion PC card into slot A7.

   e. Replace the PC card rack cover, lower the terminal cover, and plug in the power cable.

2. Potentiometer Type. This type Modem PC card must be adjusted using a VTVM or an oscilloscope while the Model 742 is on line and POWER is ON. The modem level is adjusted as follows:

   a. Connect the spade lugs on the DAA cable (TI Part No. 973260-0001) to the DAA as specified in Table 6-1.

   b. Lift the terminal cover, remove the PC card rack cover, and switch on power to the terminal.

   c. Make all measurements at the DAA unit. If a VTVM (Hewlett-Packard 400D or equivalent) is available, connect its common (−) lead to the data tip (DT) lead in the DAA cable from the terminal. Connect the other meter lead to

the data ring (DR) lead in the DAA cable from the terminal. Skip to step g. below to continue adjustment.

d. If an oscilloscope is used, it must be "floated" from the ac power line: use a 3-prong to 2-prong adapter to float the scope.

e. Connect the ground lead of the scope probe to DT.

f. Connect the scope probe to DR.

g. The ac signal level to be adjusted is between 0 and −12 dBm, corresponding to levels between 190 and 775 millivolts RMS across 600 ohms. In terms of peak-to-peak voltages, the level being adjusted is in the range of 550 millivolts p-p to 2.2 volts p-p. See Table 6-9 to convert the dBm level to RMS or peak-to-peak voltage readings across 600 ohms.

Table 6-9. Signal Level Conversions

*dBm	RMS Voltage (mV)	Peak-to-Peak Voltage
0	775	2.20
−1	692	1.95
−2	615	1.74
−3	550	1.60
−4	490	1.40
−5	435	1.20
−6	388	1.10
−7	345	0.978
−8	309	0.872
−9	275	0.777
−10	245	0.692
−11	218	0.617
−12	189	0.550

*0 dBm = 1 mW dissipated in 600-ohm load.

h. Call the terminal on another phone: DO NOT use the telephone associated with the DAA. When the data terminal answers the call (all appropriate switches must be in the LINE positions), lift the handset of the DAA telephone from its cradle. DO NOT raise the white exclusion button located on the left side of the handset cradle.

i. Press and hold the REPEAT key and then press the RUB OUT key. The terminal will go into the transmit mode and start transmitting data. Adjust the modem transmit level potentiometers (R91) or the strappable resistor on the Modem PC card (slot A-8) until the transmit level is approximately 1.5 dBm below the maximum transmit level marked on the DAA cover (example: if the cover is marked −7dBm, set the output level to −8dBm).

CAUTION

The adjustment screws of all Modem PC card potentiometers *except R91* have been sealed at the factory. Do not adjust any potentiometers except R91.

j. Replace the PC card rack cover and lower the terminal cover.

NOTE

If the DAA is not available, the signal level can be adjusted as above by placing a 600-ohm termination across the DT and DR plugs of the DAA cable.

Private Wire Systems. Transmitted data signal levels over private wire communications systems must be established by the systems' engineers. Once this level is determined, adjust the modem level as described above for a switched telephone network.

APPENDIX A

DEFINITIONS

baud — a unit of data transmission speed equal to the number of code elements (bits) per second.

bit — an abbreviation of binary digit; the smallest unit of information in a binary system of notation.

block — a grouping of data (characters); also called "rec'ord". In the Model 742, data is stored in blocks on magnetic tape or in buffers. These blocks may be filled (86 characters) or partially filled; relevant to the Model 742 HOME key.

buffer — an intermediate storage device (area) in which a block of data is stored before some action is performed. There are three such buffers internal to the Model 742, each with a maximum storage capacity of 86 characters: (1) playback buffer, (2) record buffer, and (3) entry buffer.

buffer, entry (EXECUTE MODE only) — a buffer used by the format program to perform error checks on data entered from the keyboard in response to prompts. After checks are complete, the data is transferred to the record buffer and then recorded on the record cassette. The contents of the entry buffer remain untouched even though data has been transferred and recorded or until you change the contents by keying new characters in response to prompts.

buffer, playback — a buffer in which the last block of characters read from the playback cassette is stored before the block transmitted to the line, printer, or record buffer.

buffer, record — a buffer in which characters (from the line, keyboard, playback buffer, or entry buffer) to be recorded on the record cassette are stored. Especially useful for editing procedures in the NORMAL MODE.

cassette, playback — refers to the cassette in the PLAYBACK mode.

cassette, record — refers to the cassette in the RECORD mode.

cassette, tape — the container for magnetic tape; used to facilitate operation, storage, and protection. Sometimes synonymous to the actual magnetic tape.

character — one symbol of a set of elementary symbols, such as a letter of the alphabet; a character is made up of a group of 7 bits (USASCII code).

code — a system of symbols (bits) for representing data (characters). The Model 742 utilizes the USASCII (ASCII) code.

data — a general term for any type of information.

device, storage — a device in which instructions or data can be stored and either executed or retrieved, respectively, at a later time. The Model 742 terminal has five such devices: (1) memory (for the format program), (2) playback buffer, (3) record buffer, (4) entry buffer, and (5) magnetic tape.

document, source — a form or printed evidence of a transaction from which basic data is extracted. This form is printed by the format program resident in the Model 742 memory.

duplex — describes two operations, such as transmitting and receiving; full duplex means simultaneous transmit and receive; half duplex means transmit or receive but not both at the same time.

edit — to rearrange data; i.e., delete, change, or add character(s).

error — a mistake in typing; a mechanical or physical malfunction or defect.

execute — to interpret a machine instruction (e.g., in the format program) and perform the indicated operation(s).

field — an area (assigned by the format program) in a block corresponding to one entry from the keyboard. Relevant to the RUBOUT key.

format — the arrangement of characters into fields and/or blocks.

leader — an unused or blank length of tape at the beginning and end of a reel of magnetic tape.

line, communication — describes cables, telephone line, etc. over which data is transmitted to and received from the terminal. Also referred to as the "line."

load — (1) to put data into a buffer or memory, (2) to advance a tape past clear leader to the beginning-of-tape marker.

memory — a device in which data can be stored and from which it can be retrieved at a later time.

mode — the state in which a particular device, i.e., a terminal or tape transport, is operating. The Model 742 terminal provides six major modes: (1) EXECUTE, (2) LOCAL, (3) ON LINE, (4) NORMAL, (5) PLAYBACK, and (6) RECORD.

MODE, EXECUTE — the mode in which the format program (in memory) has complete control of all terminal functions. It is in this mode that error checks are made on the data you enter from the keyboard in response to the prompts; this mode is opposite to the NORMAL MODE.

mode, LOCAL — the mode in which the Model 742 terminal is not connected to the communication line; i.e., data is neither being received from or transmitted to any remote device. The EXECUTE and NORMAL MODES operate in this mode; opposite to the ON LINE mode.

MODE, NORMAL — the mode in which all normal terminal functions are performed; i.e., searching tapes, duplicating tapes, generating format program tapes. No format program is executed; no error checks are made on data. This mode is opposite to the EXECUTE MODE.

mode, ON LINE — the mode in which the Model 742 terminal is connected to the communication line; i.e., data is being received from or transmitted to a remote device. The TRANSMIT and RECEIVE modes operate in this mode; opposite to the LOCAL mode.

mode, PLAYBACK — the mode of a particular transport when it is ready to read data from tape into the playback buffer. This mode is opposite to the RECORD mode.

mode, RECEIVE — the mode in which the Model 742 is receiving data. This mode is opposite to the TRANSMIT mode.

mode, RECORD — the mode of a particular transport when it is ready to read data from the record buffer and record on tape. This mode is opposite to the PLAYBACK mode.

mode, TRANSMIT — the mode in which the Model 742 is transmitting data. This mode is opposite to the RECEIVE mode.

nulls — an absence of information, as contrasted with zero or blank for the presence of no information.

playback, play back (verb) — to read data from the playback cassette into the playback buffer; data on the playback cassette remains unchanged.

processor — the portion of the terminal in which arithmetic and logical operations are performed. The processor interprets the machine instructions in a format program.

program, format — a sequence of machine instructions which, when executed consecutively, prescribe the series of steps to be taken by the terminal; i.e., print a prompt, receive a keyboard entry, check the keyboard entry, illuminate the ERROR indicator, rewind the playback cassette, etc.

prompt — a word or group of words printed out from memory or tape to indicate to the operator what type data to enter from the keyboard; e.g., "NAME".

read — to sense information contained in some storage device.

record — (1) re cord' (verb) — to put data into a storage device; (2) rec'ord (noun) — a block of data.

tape, magnetic — A storage device in which data is stored in the form of magnetic dots on specially coated plastic. Bits are stored as magnetized dots arranged in columnar form across the width of the tape in patterns understood to be specific characters. There are two "tracks" on the tape, one for each side of the cassette.

transport, tape — a device which moves magnetic tape (contained in a cassette) from one reel to another for playback, recording, rewinding, etc.

write — to record data contained in a storage device.

APPENDIX B
ASCII CODE SYSTEM AND CHARACTER SET

b_4 b_3 b_2 b_1	b_7 → 0 b_6 → 0 b_5 → 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0 0 0 0		NUL	DLE	SP	0	@	P	\	p
0 0 0 1		SOH	DC1	!	1	A	Q	a	q
0 0 1 0		STX	DC2	"	2	B	R	b	r
0 0 1 1		ETX	DC3	#	3	C	S	c	s
0 1 0 0		EOT	DC4	$	4	D	T	d	t
0 1 0 1		ENO	NAK	%	5	E	U	e	u
0 1 1 0		ACK	SYN	&	6	F	V	f	v
0 1 1 1		BEL	ETB	'	7	G	W	g	w
1 0 0 0		BS	CAN	(	8	H	X	h	x
1 0 0 1		HT	EM	)	9	I	Y	i	y
1 0 1 0		LF	SUB	*	:	J	Z	j	z
1 0 1 1		VT	ESC	+	;	K	[	k	{
1 1 0 0		FF	FS	,	<	L	\	l	|
1 1 0 1		CR	GS		=	M	]	m	}
1 1 1 0		SO	RS	.	>	N	^	n	~
1 1 1 1		SI	US	/	?	O	—	o	DEL

PRINTABLE CHARACTERS

PRINTER CONTROL CHARACTERS

CODES GENERATED AND TRANSMITTED BY THE TERMINAL

USASCII CONTROL CHARACTERS
(From USA Standards Institute Publication X3.4—1968)

ACK	acknowledge	ETX	end of text
BEL	bell	FF	form feed
BS	backspace	FS	file separator
CAN	cancel	GS	group separator
CR	carriage return	HT	horizontal tabulation
DC1 = X-ON	device control 1	LF	line feed
DC2 = TAPE	device control 2	NAK	negative acknowledge
DC3 = X-OFF	device control 3	NUL	null
DC4 = ~~TAPE~~	device control 4 (stop)	RS	record separator
*DEL	delete	SI	shift in
DLE	data link escape	SO	shift out
EM	end of medium	SOH	start of heading
ENQ	enquiry	STX	start of text
EOT	end of transmission	SUB	substitute
ESC	escape	SYN	synchronous idle
ETB	end of transmission block	US	unit separator
		VT	vertical tabulation

*not strictly a control character

APPENDIX C

EQUIPMENT SPECIFICATIONS

MODEL 742 GENERAL SPECIFICATIONS

1. PRINTER
   a. Friction-feed platen
   b. Line length: 8 inches (80 characters/line, 10 characters/inch).
   c. Line spacing: switch-selectable 3 or 6 lines/inch.
   d. Complete visibility of printed data, including the line being printed and the character just printed.
   e. Enclosure contains space for printing paper: 8-1/2 in. wide x 300 ft. long x 3-5/8 in. diameter roll.
   f. Character font: characters from 5 x 7, 35-dot matrix printhead, character size 0.105 in. x 0.080 in. Lowercase received data is printed from 5 x 5 matrix, character size 0.0715 in. x 0.080 in.
   g. Carriage return/line feed (CR/LF) automatic at column 81, no code is transmitted. Maximum time for: (1) CR is 195 msec from any column, (2) LF (single space) is 33 msec, and (3) LF (double space) is 67 msec.

2. PRINTING PAPER
   TI thermographic printing paper, No. 213714 (white).

3. PAPER-OUT INDICATION
   Last 10 ft. of TI thermographic printing paper roll is color coded.

4. KEYBOARD
   "Two-key rollover" electronically prevents transmission when two keys are depressed simultaneously.

5. CASSETTES
   a. Recording method: phase-encoding at 800 bpi, 86 character blocks.
   b. Bit error rate: 1 in 10^6 (maximum), 1 in 10^7 (typical).
   c. Storage medium: ANSI-compatible (Phillips-type) cassettes containing 300 feet digital grade magnetic tape.
   d. Storage: 144,000 data characters/track or 288,000 data characters/cassette (mimimum).
   e. Off-line playback or record at 30 characters/second; tape duplication without printing at up to 200 characters/second. On-line playback or record at 110, 150, 300, and 1200 baud.
   f. Tape speed: read/write 8 in./sec.; rewind time, 60 seconds (maximum).
   g. Sensors: EOT, BOT, cassette in place, write tab, cassette door closed.

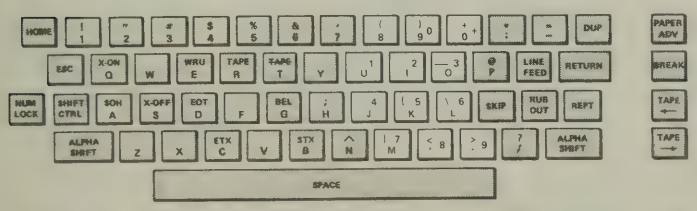
6. PHYSICAL
   a. Power requirements: 115/230 volts RMS, +10 percent -15 percent, 50/60-Hz, 400 VA maximum via a 6-foot 3-wire cable with type "U" grounded 3-prong connector.
   b. Ambient temperature: Operating, 10°C to 35°C. Storage, -30°C to 70°C, not including paper or magnetic cassettes. Paper, -30°C to 40°C.
   c. Shock: Operating 0g. Storage and handling, 10g for 11 msec (in shipping container.)
   d. Vibration: 10 to 60 cps, 0.5 g.
   e. Humidity: Operating, equipment only, 20 percent to 80 percent. Storage, 10 percent to 95 percent (non-condensing).
   f. Terminal is self-contained. Dimensions are 21.2" wide x 19.5" deep x 14.6" high.
   g. Weight (excluding options): 60 lbs. maximum.

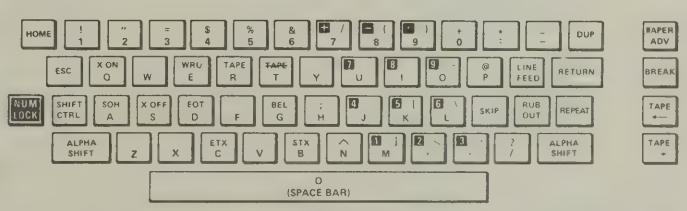
MODEL 742 DETAILED SPECIFICATIONS

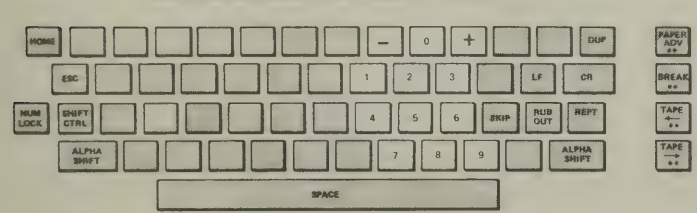
1. KEYBOARD AND TRANSMISSION CODE
   USASCII, seven-level, 11 bits/character, including parity, start, and 2 stop bits at 10 characters/second speed, 10 bits/character with 1 stop bit at higher speeds.

   Standard ASCII keyboard has 68 printable characters, 33 control characters, and keypunch-type numeric cluster.

   Optional Calculator Cluster Keyboard has 68 printable characters, 33 control characters, and a calculator-type numeric cluster.







2. DATA FORMAT

Half-duplex, asynchronous serial-by-bit, serial-by-character; within the terminal 8 bits include a 7-bit ASCII character code plus an extra bit used as a block marker in the cassette (upper) unit.

3. OPERATOR CONTROLS

a. Terminal:
POWER: ON/OFF
SPEED: LO/MED/HI; SPEED: LO/HI
Transmission Mode: HALF/FULL DUPLEX (HALF without local copy)
Transmission Status: ON LINE/OFF
PARITY: ODD/EVEN/MARK
RDC: ON/OFF
PROTOCOL: BLOCKED/INTERACTIVE/TTY

b. Printer
Print CONTRAST: light-Dark
LINE FEED: single/double
Status: LINE/OFF/LOCAL

c. Cassette 1/Cassette 2
Operating Mode: RECORD/PLAYBACK
Tape: REWIND/STOP and LOAD, FAST FWD/STOP

d. Record Control
Status: LINE/OFF/LOCAL and ON/OFF
Tape: ERASE/PRINT
Tape Format: LINE/CONTinuous

e. Playback Control
Status: LINE/OFF/LOCAL
Tape: CONTinuous START/STOP, BLK FWD/REV and CHARacter FWD

f. Keyboard:
REPEAT key
PAPER ADVance key
LINE FEED key
BREAK key
TAPE, TAPE keys
ALPHA SHIFT
NUMeric LOCK
SHIFT CONTROL
SKIP
HOME
DUPlicate
Status: LINE/OFF/LOCAL

4. CONDITION INDICATORS

a. Terminal:
Power-on lamp

b. Cassette1/Cassette2:
READY lamp
END lamp
RECORD lamp
PLAYBACK lamp

c. Record Control:
RECORD ON lamp
CHARACTER DISPLAY

d. Playback Control:
PLAYBACK ON lamp
PLAYBACK ERROR lamp

e. Terminal Status:
ERROR lamp
BUSY lamp
NORMAL MODE lamp
EXECUTE MODE lamp
RING INDICATOR lamp
TERMINAL READY lamp
RECEIVE MODE lamp
TRANSMIT MODE lamp

5. CASSETTE SUBSYSTEM

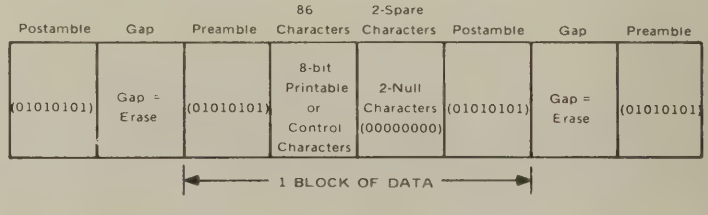
a. Record Format: Incremental by block; preamble (8 bits, ANSI std.) 86 data or control characters, two characters (16 bits) for future flexibility, and postamble (8 bits ANSI std.).

b. Playback or Record: 10, 15, 30, and 120 characters/second. Tape duplication without printing at 200 characters/second.

c. In LINE Format, block corresponds to a line of printout; in CONTinuous Format, block has 86 characters and may contain several printed lines. Line Format provides editing ease while Continuous Format achieves maximum packing density. Converting between formats achieved via tape duplication.

d. Interchangeability: Any tape recorded on any Model 742 cassette operating within specifications may be read on any other Model 742 operating within specifications. Model 742 tape READ/WRITE capability is compatible with Model 733.

e. Tape Format:



6. PROCESSOR

a. Operating Modes: Normal and Execute

b. Program Storage:

- Standard Configuration
  Normal = 1338 words
  Extended = 1792 words

- With Memory Expansion Feature
  Normal = 3386 words
  Extended = 3840 words

c. Operating Features: Line Control, Local Control, Automatic Search, and Remote Terminal Control
d. Instruction Set: Standard = 76 commands; Memory Expansion = 112 commands
e. Registers: seven general registers and one accumulator
f. Register Size: 11 decimal digits plus sign (integer only)
g. Entry Buffer Size: 86 locations
h. Record Size: one or more fields, but not more than 86 characters
i. Field Size: one or more subfields, but not more than 86 characters
j. Subfield Size: one to 86 characters
k. Memory: Standard = 8k bytes ROM, 2k bytes RAM; Memory Expansion = 10k bytes ROM, 4k bytes RAM
l. Answerback Memory Size: one to 21 PROM locations
m. Transmit Buffer Size: 425 characters

DATA INTERFACE SPECIFICATIONS

EIA RS-232-C Serial Data Interface

Standard EIA RS-232-C interface cable is 6 ft. long, terminated with a 25-pin male connector

Terminal Pins	Modem Pins	Function
A	1	Protective Ground
H	2	Transmitted Data
10	3	Received Data
F	4	Request to Send[1]
8	5	Clear to Send[2]
9	6	Data Set Ready[3]
7	7	Signal Ground
K	8	Data Carrier Detect[4]
5	11	Reverse Channel Transmit[5]
4	12	Reverse Channel Receive[6]
6	20	Data Terminal Ready[7]
J	22	Ring Indicator[8]

1. Held to EIA ON (> +3V) when terminal is ready to transmit.
2. Held to EIA ON by modem to allow transmission — required for transmission.
3. Held to EIA ON by modem when modem is operative — required for operation.
4. Held to EIA ON by modem during receipt of carrier — required for data reception.
5. Held to EIA ON when terminal is in receive mode; to EIA OFF (< +3V) in transmit mode.
6. Held to EIA ON by modem to indicate presence of reverse channel tone; EIA OFF if no tone.
7. Held to EIA ON when terminal is on line; EIA OFF when terminal is off line or to terminate a call.
8. Normally EIA OFF; signal goes high with ring of incoming call.

Data Access Arrangement (DAA)

A. Conforms to Bell Data Access Arrangement Type CBS.
B. Use with built-in 1200-baud modem.
C. A 6 ft. cable with 8 spade lugs is supplied.

Terminal Pin	Wire Color	Function
7	Black	Signal Ground (SG)
D	Red	Off Hook (OH)
J	Green	Ring Indicator (RI)
1	White	Coupler Cut Through (CCT)
B	Brown	Data Transmission (DA)
E	Orange	Data Tip (DT)
3	Yellow	Data Ring (DR)
2	Blue	Switch Hook (SH)

CUT ALONG THIS LINE

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